THE RUBBER AGE

ESTABLISHED 1917

COVERS ALL PHASES OF THE PRODUCTION AND MARKETING OF CRUDE RUBBER AND THE MANUFACTURE AND DISTRIBUTION OF RUBBER GOODS

Vol. 34 OCTOBER, 1933 No. 1

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A. H. GOLD.....Circulation Manager
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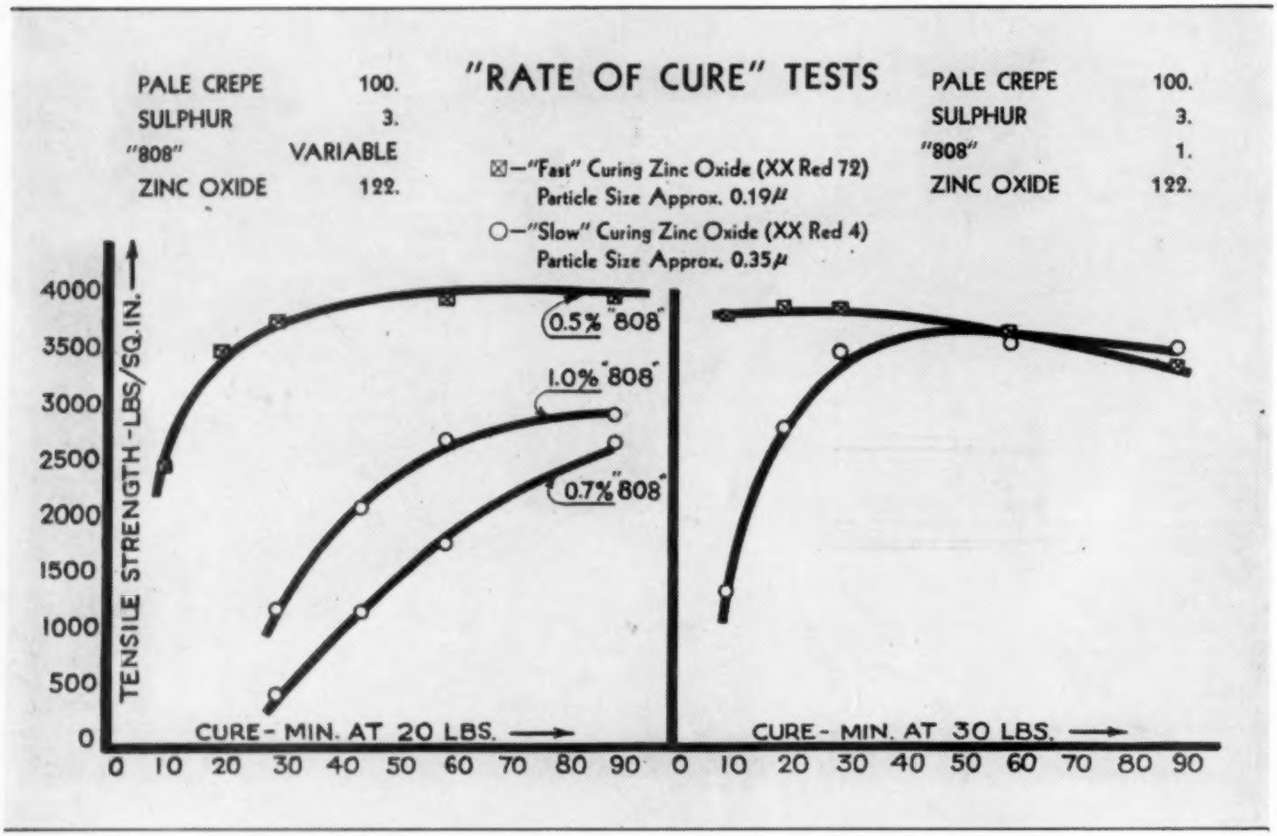
No. 20

of a series of charts showing a comparison of "fast" and "slow" curing zinc oxides with typical accelerators.



The effect of curing temperature and accelerator concentration on the "FAST" (XX Red 72) and "SLOW" (XX Red 4) curing Zinc Oxides

Note: Curing at 20 lbs. steam, doubling the amount of "808" is not sufficient to bring the curing rate of XX Red 4 Zinc Oxide in line with the results obtained with XX Red 72. However, curing at 30 lbs. steam, with the accelerator constant at 1%, XX Red 4 gives the same ultimate tensile strength as XX Red 72, but shows the characteristic retardation in the earlier cures.

New Jersey Zinc

160 FRONT STREET, NEW YORK

THE NEW JERSEY ZINC COMPANY

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A New Method for CONTROLLING THICKNESS of Rubber Coatings

By OLIVER P. VAN STEEWEN

IT IS oftentimes desired to effect a continuous measurement of the thickness of the rubber coating on fabric strips in order to reduce the consumption of rubber to a minimum and to produce a uniform product. This is very important with the coated plies used in the manufacture of pneumatic tires, whose durability and other properties depend to a large extent upon the uniformity of the rubber coating. The difficulty of the measurement is largely due to the fact that even when the thickness of the fabric varies, the rubber coating must be uniform throughout.

Accordingly, it is totally inadequate to effect a thickness measurement on the finished rubberized texture, as could for instance be done by feelers. Weighing methods also would not afford the desired results, irrespective of the difficulties which are inseparable from continuous weighing. This is shown by the fact that rubber and fabric possess nearly the identical specific weight.

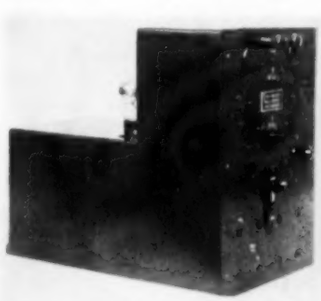


FIG. 2—Electrical Part of the Idometer.

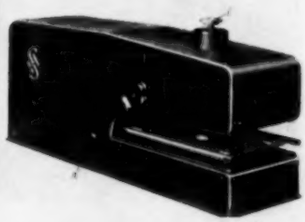


FIG. 3—The Idometer.
n—Button for Actuating the lifting device.

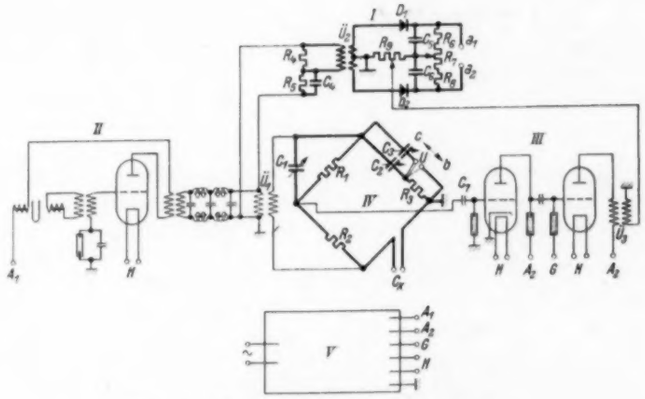


Fig. 1—Connection of the Idometer

I. Rectifier Bridge. D_1-D_2, Rectifier; U_1-U_2, Transmitter; R_1 . . . . R_9, Ohmic Resistances; C_1 . . . . C_6, Condensers; a_1-a_2, Instrument Connections.
II. Valve Buzzer for producing the Measuring Current, A_1, from mains; H, Heating (from mains).
III. Amplifiers.
IV. Measuring Bridge
U, Throw-over switch; C_1-C_2-C_3 Adjusting condensers;
Cx, Measuring Condensers
V. Mains Connection Part.

There is only one electrical characteristic which is suitable as a basis for such measurement. This is the dielectric constant which is much higher for rubber than for textiles. The manner of procedure should therefore be fundamentally such that the rubberized fabric is inserted as the insulating intermediate layer (dielectric) in a condenser, thereupon measuring the alteration of the capaci-

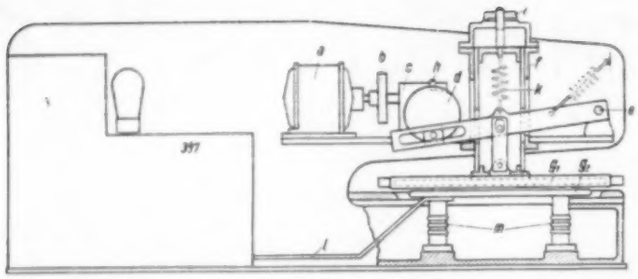


FIG. 4—Section Through the Idometer

g_1-g_2, Condenser Plates; m, Insulators; l, Connection Bars; abckefkh, Lifting Attachment.

tance relative to the condition which would obtain if only the fabric proper were used as the dielectric. This naturally requires a measuring arrangement which permits small alterations in capacitance to be measured. Such an arrangement is proffered by a bridge connection which is fed by alternating current of suitable frequency. It is, of course, not expedient to use alternating current instruments for indicating the values to be measured, as they are not very suitable for the measurement of very small voltages. Recourse is therefore had to rectification of the current so that highly sensitive direct current instruments can be used.

Following these principles, Messrs. Siemens & Halske, German manufacturers, developed a measuring arrangement which is intended for supervising the thickness of the rubber coating of fabric strips and which has already shown its great practicability in many factories. The device is known as the Idometer.

Essentially, it comprises a condenser of special construction and an electrical part embracing the bridge connection, etc. Fig. 1 explains the principle of the Idometer. The measuring bridge is fed by a tuning fork controlled valve buzzer. The auxiliary voltage for the rectifier bridge is branched off at the inlet of the measuring bridge. The measuring voltage across the outlet of the bridge is amplified by a two-valve amplifier and then fed to the rectifier bridge across the outlet terminals of which the indicating or recording instruments are connected. The measureing condenser is connected to the terminals C_x, the textile to be supervised being conducted between the plates of this condenser. In order to be able to compensate for slight alterations in the capacitance of the measuring condenser, due to mechanical or thermal influences, a condenser, C_2, is inserted in the comparing branch of the bridge. Prior to putting the Idometer into service, the rotary condenser C_3 is adjusted to a standard capacitance value which therefore keeps the bridge in equilibrium when a section of fabric with normal rubber coating is located between the condenser plates.

The electrical part of the Idometer, which incorporates the main connection part, the valve buzzer as well as the switching elements of the bridge, is shown in Fig. 2. The

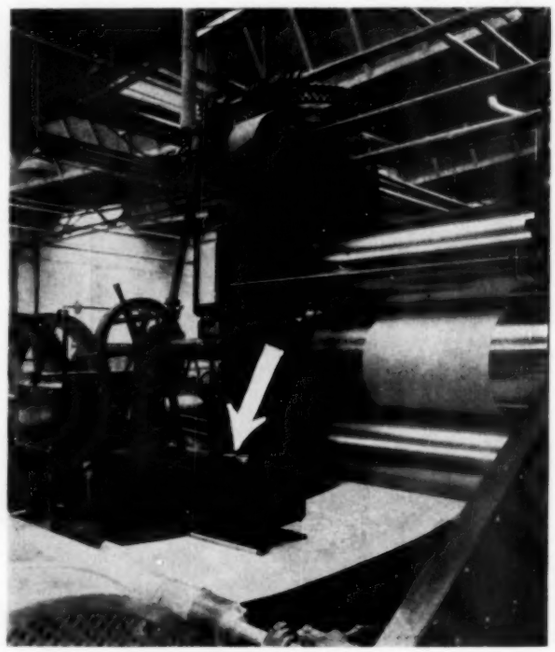


Fig. 5—Idometer Fitted on a Calender with Indicating and Recording Iustruments

crank handle in the middle belongs to the adjusting condenser C_3. This crank handle can be removed. After setting the condenser to the capacitance corresponding to that of the material under supervision, all other operating parts can only be adjusted by means of a screw driver, as usually they are not intended to be altered. The terminals visible on top are for connecting up the instrument. Fig. 3 shows a general view of the Idometer, and Fig. 4 shows a section revealing the construction of the measuring condenser as well as the attachment for raising the top condenser plate. This lifting operation, which is necessary at patched and thick places, can be performed by the calender operator either by depressing the button or by remote control. The top plate can likewise be raised by the laterally positioned handwheel. The electric lifting device is connected in such a way that the condenser plate is lifted or lowered but once each time, irrespective of the duration of contact making. The distance between the plates is 4 mm., when lifted 50 mm. This gap between plates can also be increased for thicker rubber strips.

The measuring sensitivity of the Idometer is very considerable. With its aid, fluctuations in weight to within ¼ of 1 per cent can be read. The recording equipment, Fig. 5, takes the form of a chopper bar recorder with a recording sequence of 3.5 secs., so that if the speed of the material is 20 metres/min., a point of measurement is obtained every metre of material.

Fig. 6 illustrates two record charts produced by the Idometer which clearly reveal the much greater accuracy of regulation attainable by using this device. The saving in rubber which is thus obtainable in large plants is so important that the entire outfit is amortized in a few months.

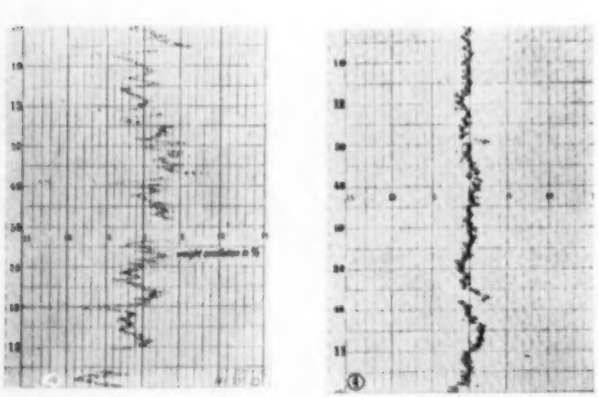


Fig. 6—Fluctuations in the Weight of the Rubber.

(a) Regulating with Mechanical Supervision.
(b) Regulating with Data Furnished by Idometer.

New Army Specifications for AIRPLANE FUEL HOSE

Recent Improvements in Hose Compounded with Thiokol Cause Inclusion of This Material in Revised Specifications

By JOHN P. BUSHNELL

FROM the time the Wright Brothers fitted the first motor into their plane at Kitty Hawk, N. C., to the latest speed exploits across continents and oceans, gasoline and oil supply hose used at airplane fields have presented difficulties. With the enormously increasing commercial aviation activities throughout the world, a particularly new and unique market for rubber composition hose has arisen. The application of rubber composition hose on aircraft fields, in servicing planes, trucks and storage pits for gasoline and oil, has proved an important one and affords an increasing market for such type of mechanical hose. The outstanding feature of the new type of hose must be its oil and gasoline resistant properties.

The Air Corps of the United States Army have recently prepared detailed specifications covering such gasoline servicing hose for Government aviation fields.

The specifications cover one type of wire reinforced gasoline servicing hose with an inner tube consisting of an olefin-polysulfide reaction product (Thiokol) compounded with rubber. The fabric of the hose consists of a cotton duck of the best commercial quality, clean and free from manufacturing imperfections. The inner tube and the outer rubber cover are uniform in thickness, smooth and free from pitting. The hose is reinforced with flat, oil-tempered steel wire and spirally wound with ½ inch spacings.

Thiokol, which is compounded with crude rubber in the make-up of the hose, is a product of synthesis and is widely different in chemical composition from crude rubber. It is made by chemical interaction of ethylene dichloride ($C_2H_4Cl_2$) and sodium polysulfide (Na_2S_x). In analysis it will show essentially 15.5 per cent carbon, 2.5 per cent hydrogen and 82 per cent sulphur. It is homogenous, firm and dense in appearance, but pliable in handling. It is opaque and pale yellow in color and has a characteristic odor. It shows no chemical deterioration over long periods and even in its raw state it is insoluble in any of the usual solvents. On the other hand, the processing of Thiokol is similar to that in the case of raw rubber. It can be cured by mixing into it any one of a number of materials such as zinc oxide and other rubber compounding materials.

Thiokol closely resembles crude rubber in most of its physical properties, yet contains no actual rubber in its composition. The material is being manufactured by the Thiokol Corporation, Yardville, N. J.

The gasoline servicing hose for aviation purposes, in line with the proposed Air Corps specifications, and now on the market for commercial airports, is being manufactured by the Rubber Manufacturing Division of the Raybestos-Manhattan Company, Inc., Passaic, N. J.

Further details in the construction of this hose call for an outer cover of abrasion and oil-resisting rubber; two plies of cotton duck, thoroughly impregnated with a suitable rubber compound, and firmly cemented to each other and to the other components of the hose; one ply of oil-resisting rubber compound; spirally wound, flat, oil-tempered steel wire, with ½ inch pitch; another ply of oil-resisting compound; two more plies of cotton duck, impregnated with rubber and cemented to each other.

As regards the inner tube, it is of specially compounded stock consisting of approximately 20 parts of rubber, and 100 parts Thiokol, with the other necessary compounding ingredients to insure permanent form and suitable service.

The tensile strength of the inner tube is tested to not less than 500 pounds per square inch under normal conditions. The tensile strength of the outer cover must not be less than 800 pounds per square inch under normal conditions. A minimum elongation of the inner tube is fixed at 250 per cent under normal conditions and the minimum elongation of the outer cover is set at 300%.

But the great advantages of the new hose lie in its solvent resistant qualities. Thiokol has produced a type of hose which has stood up under the most severe tests. Specimens of the composition inner tube, when immersed in oil for 48 hours at 150° F. shall increase in length not more than 10% and in thickness not more than 2½%.

In further tests, specimens of the inner tube were immersed in gasoline for 48 hours, at room temperature and then dried. (The change in dimensions and physical properties shall not be increased more than 10% of the original dimensions.)

Specimens of the inner tube were also boiled in gasoline, for one hour, then allowed to remain in the gasoline for 24 hours, then dried, but no increase in dimensions in excess of ten per cent could be noted and the tensile strength and elongation of the tube were not reduced more than 20% of their original properties.

When subjected to a crushing load along a two-inch length, the finished hose withstands a load of 300 pounds without permanent deformation of the hose. When the same length was subjected to a load of 1,000 pounds there was no rupture of the component parts of the hose and no failure of the wire reinforcing.

With this effective application of Thiokol in gasoline servicing hose in aviation work, the time may not be far distant when metal tubing on air-craft and seaplanes may be replaced by this particular rubber composition material, for their entire gasoline and lubricating systems.

Friction of TIRES on Pavements

THE RESULTS of additional tests on the friction of automobile tires on road surfaces have recently been reported by Professor C. P. Roberts of the Department of Mechanical Engineering of Ohio State University in *Engineering Experiment Station News*. For the purpose of the tests the frame of a Dodge DD-6 chassis was cut just back of the engine rear mounting, and the sides were bent together and welded so that the rear wheels could be used without alteration in the spring supports. A platform was built across the front to carry the braking mechanism. The gasoline tank was replaced by a tank of approximately the same size tested for air at 175 pounds. Cast-iron dead weights were located so that the trailer would be in balance in its normal operating position. The total weight of the trailer, fully equipped, was 1500 pounds.

The trailer was connected to the Buick sedan towing car through a hydraulic drawbar dynamometer, with cylinder of bore 2 inches and depth 6 inches. The connection was in line with the left wheel of the trailer and so arranged as to transmit the pull of the trailer to the fluid in the cylinder. The trailer chassis was originally equipped with Lockheed hydraulic brakes. An air booster system, constructed to take the place of the master cylinder, made smooth operation possible and permitted the use of electrical control which could be operated from the towing car. To eliminate trouble due to unequalized brakes and to allow placing the desired load on the wheel under test without overloading the towing car, only the left wheel of the trailer was equipped with a brake.

The recording mechanism in the towing car recorded all data on a continuous chart, traveling 2.25 inches per second. A record of the drawbar pull was obtained with a pressure element of a Crosby engine indicator connected to the dynamometer cylinder. A solenoid-controlled pencil energized through a breaker operated by a six-point

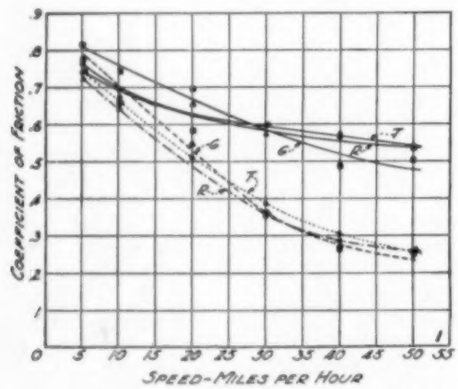


Fig. 1.—Rolling and Sliding Friction on Bituminous Concrete

cam on the end of the left axle of the trailer made a dash line on the chart when the wheel was turning; stopping of the wheel was indicated either by a solid line or by no line at all.

In making tests the driver signals when road conditions are satisfactory, the operator throws the switch which controls the setting of the brake, and the driver regulates the throttle opening to maintain a constant speed. As soon as the test tire slides, the operator presses the brake release switch and resets the mechanism for another test.

The results of two series of tests made on wet roads with three different tires are shown in the graphs. Figure 1 shows the results obtained on a bituminous concrete road known as T-5 type "B" surface according to the specifications of the Ohio Highway Department. Figure 2 is for portland cement concrete. Both of these roads are of recent construction and in good condition.

Tire "R" (triangle test points) and "T" (circle) were

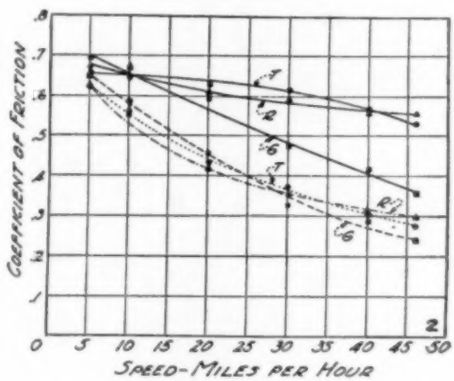


Fig. 2—Rolling and Sliding Friction on Portland Cement Concrete

of different non-skid tread designs, and had only a small amount of wear. The tread design on tire "G" (rectangle) was worn smooth, but the cords were well covered with rubber. The rolling coefficient is shown by solid lines and the sliding by broken lines.

The speed range on the T-5 road was from 5 to 50 miles per hour and on the portland cement concrete 5 to 40 miles per hour. Top speed is limited by the maximum power of the towing car.

At 5 miles per hour little difference can be noted between sliding and rolling coefficient for any one tire, but as the speed increases the rolling coefficient does not fall off as rapidly as does the sliding coefficient. On the T-5 road, the values for both sliding and rolling lie between 0.72 and 0.82 for 5 m.p.h. At 50 m.p.h. rolling shows values between 0.48 and 0.54 and sliding 0.23 to 0.26. A greater variation is noted for the smooth-tread tire than for the other two tires. This condition exists on both the rolling and sliding, with the smooth tread showing a better value for friction at the low speeds and the non-skid better at the high speeds.

The rolling coefficient with the non-skid tread on portland cement concrete is about the same at 46 m.p.h. as found on the T-5, but shows a marked drop with the smooth tire. The curves for sliding on all tires are very similar to those obtained on the T-5 except that the slope of the curves is not as great. The T-5 surface is more open than the portland cement concrete; perhaps this condition is the factor which gives the variation in rolling coefficient for the smooth tread. Tests on another type of bituminous concrete with an open surface show characteristics similar to those of the T-5, but on a dense surface bituminous concrete the coefficient falls more rapidly. This was also true of two sections of asphalt-filled brick which were partially covered with filler.

The test program contemplates readings on a number of types of pavement surfaces, using tires with different tread designs and various air pressures.

Chicago Meeting of RUBBER DIVISION Is Well Attended

AS was to be expected, the double attraction of a Rubber Division meeting and a Century of Progress Exposition brought together an unusually large gathering of rubber chemists and technologists at the Fall Meeting of the Rubber Division of the American Chemical Society, held at Hotel Stevens, Chicago, on September 11-14. About three hundred members, associates and guests attended the sessions and listened to the twenty-two papers already described in the September, 1933, issue of THE RUBBER AGE.

Added interest was given to the papers by the new system of fostering open discussion, and in several cases the discussion following the presentation was animated and extremely informative in itself. It is by such open forums that the merits and shortcomings of papers on rubber are evident.

All present at the sessions should warmly appreciate the manner in which the published schedule was carried out. The times assigned were followed almost mathematically, so that every paper with its discussion was held strictly at the time scheduled on the "timetable." This is a big advance for the Rubber Division and represents a noteworthy accomplishment on the part of those who have been able at the last few meetings to establish this practice.

The Business Meeting which followed the technical program, was devoted chiefly to the election of new officers. The Nominating Committee, consisting of Messrs. Gray, Nelson and Krall, offered a most worthy set of candidates, from whom the following were elected to represent the Rubber Division during 1933-1934. Chairman, Ira Williams; DuPont; Vice Chairman, S. M. Cadwell, U. S. Rubber; Secretary-Treasurer, H. E. Simmons, Akron University; Sergeant-at-arms, C. W. Christensen, Rubber Service Laboratories; Executive Committee, L. B. Sebrell, Goodyear; F. W. Stavely, Firestone; J. T. Blake, Simplex; H. J. Conroy, General; Carl Frick, Van Cleef.

Hotel Stevens—where the Rubber Division Held its Meetings

Besides these elections, E. R. Bridgwater, E. I. DuPont de Nemours & Co., was appointed Advertising Manager of *Rubber Chemistry and Technology* to take care of its growing advertising. Mr. Bridgwater has already done invaluable work for the Rubber Division journal, and his continuance in an official capacity is extremely fortunate.

It was decided to withhold the four symposium papers by Fisher and Gerke, by Williams, by Shepard, Street and Park and by Crawford on the Progress of Chemistry in the Rubber Industry from publication in the usual way, and instead to use them in conjunction with future papers as the basis of a monograph on the progress of rubber chemistry and technology. *(Continued on next page)*

IRA WILLIAMS
Newly Elected Chairman

New Officers Rubber Division 1933-1934

Ira Williams.....*Chairman*
S. M. Cadwell.....*Vice Chairman*
H. E. Simmons.....*Secretary-Treasurer*
C. W. Christensen.....*Sergeant-at-arms*

Executive Committee

L. B. Sebrell — J. T. Blake
F. W. Stavely — H. J. Conroy
Carl Frick

S. M. CADWELL
Newly Elected Vice-Chairman

One of the most important and gratifying events of the meeting was the promise of Secretary-Treasurer Simmons to continue in office. His elevation to the Presidency of the University of Akron had caused many to fear that he would not be able to continue, and his decision was received with great delight by all. His resignation would have meant the loss of one of the animate foundation stones of the Rubber Division.

The report of the Secretary-Treasurer showed a total membership of 406 at present including old and new regular members, and associate members. The treasury was shown to be in a fairly satisfactory condition, notwithstanding a considerable sum of money in restricted account.

It was decided to hold the sessions in the spring of 1934 at St. Petersburg, Florida, in connection with the general meeting of the American Chemical Society. Some doubt has been expressed of the advisability of attempting to hold a meeting of the Rubber Division at such a distance.

The Rubber Division banquet was held at the Hotel Sherman on Tuesday evening, September 12, with 262 in attendance. The affair was unusually festive and was enlivened by an orchestra, baritone, contralto, ballet dancer and xylophonist. The chief speaker of the evening, Mr. Dudley Crafts Watson, artist, lecturer and writer is a member of the Art Institute of Chicago and of the Fine Arts Department of the Century of Progress Exposition. His address, "Science Perfected—What Next?", doubtless left every listener with a better appreciation of the growing importance of art in the modern world, and the futility of science without art or of art without science. Several of those present received special recognition and applause, including Dr. J. R. Katz of Amsterdam, the first investigator of the structure of rubber x-rays, Professor G. S. Whitby of McGill University, Mr. C. J. McMenemy, of Fergusson, Shiers and Co. of Lancashire, England, Arnold Smith, of Rubber Service Laboratories Co., newly returned to America, President Simmons of the University of Akron and Dr. H. E. Howe, Editor of *Industrial and Engineering Chemistry*.

Following the entertainment a drawing was held for a number of handsome prizes, which included an electric clock, a golf bag, a camera, and numerous articles of silver and leather. A number of useful souvenirs was also distributed at each table. The following firms made possible the souvenirs and gifts: Ahlbell Battery Co.; American Zinc Oxide Co.; Anaconda Zinc Oxide; Binney & Smith Co.; Godfrey L. Cabot, Inc.; Chemical & Pigment Co.; Dryden Rubber Co.; E. I. DuPont de Nemours & Co.; General Atlas Carbon Co.; J. M. Huber, Inc.; Inland Rubber Co.; Midwest Rubber Reclaiming Co.; Naugatuck Chemical Co.; New Jersey Zinc Co.; Philadelphia Rubber Works Co.; Richardson Co.; Rubber Service Laboratories Co.; Henry L. Scott Co.; United Carbon Co.; R. T. Vanderbilt Co.; Wishnick-Tumpeer, Inc.

Doubtless all who attended the banquet and the scientific sessions of the Rubber Division left with a feeling of gratitude to the Chairman and to all others responsible for a most enjoyable and instructive three days of activity.

Belting in Argentina

ARGENTINA has for a number of years been a good outlet for various types of machinery belting, and during the last few years, prior to the world depression, the general demand for belting showed a considerable increase owing to the rapid development of many new local industries, according to a recent report of Canadian Trade Commissioner H. A. Scott.

Industrial users of belting in this country of one kind or another include grain elevators, flour mills, packing houses, shoe and textile factories, foundries and workshops, quebracho producers, sugar refineries, and various specialty trades which have lately become established.

Rubber conveyor belts are sold in this market in widths ranging from 20 inches up to 40 inches; 24-inch and 30-inch seem to be popular widths, although the demand varies according to requirements; 4, 5, and 6 plies are used; the canvas carcass runs from 28 to 32 ounces. Rubber coverings are mainly 1/16-inch on top and 1/32-inch on the bottom. The lengths of belts are necessarily governed by the particular requirements of the elevators.

In addition to conveyor belts, grain companies also use a certain amount of friction surface rubber belts as legs in elevators, in widths from 9 inches to 14 inches, in lengths ranging up to around 125 feet, but this is of course a small trade compared with conveyor belts.

The conveyor belt market is extremely competitive, and the business at present seems to be largely governed by whoever can quote the lowest price. The conveyor belt trade used to be pretty well controlled by the United States; but lately the United Kingdom, aided by the lower exchange value of the pound sterling, has been better placed to obtain a share of this business. Rubber belting from Canada has also been reaching this market in considerable quantities. Certain continental countries have been in the market, but competition from such sources has not been as strong as in the case of the United Kingdom, and United States manufacturers, in order to maintain their position in the face of English quotations, have had to cut their prices to very low levels. In addition to imports, rubber conveyor belting is also produced in Argentina. It is reported, however, that the two or three local manufacturers turning out this class of belting have a limited capacity, and only secure emergency orders from grain companies when local stocks of imported belting are not immediately available.

The market for transmission rubber belting is on the whole rather over-supplied at present, and as a result distributors have been trying to liquidate their stocks at falling prices. Most of this type of rubber belting comes from the United States and the United Kingdom. As in the case of conveyor belting, the trade is mainly in the hands of importers or branch houses, and as a rule fairly large stocks of the more staple sizes are carried. Some of the larger distributors, whether branch houses or importing firms, have technical experts on belting attached to their organization in order to guide the local sales staff and also to take care of any servicing that may be required by consuming industries.

The principal sizes of rubber transmission belting sold on this market run from 1-inch up to 6-inch widths, although larger sizes are also carried in stock. Plies usually vary from three to six. One explanation given for the demand for relatively small-sized belts is that there is a trend in several industries to use small electric motors for serving individual machines in place of larger units taking care of a number of machines. There are, of course, industries which necessarily still require the larger-sized belts for their transmission systems. Meanwhile, due to depressed conditions, no new plants of any importance are being erected, so that orders are only available for replacements.

Recent RUBBER LATEX Patents

Abstracts of U. S. Patents on Latex and Its Uses in Manufactured Products from July 1932 to Date

By FREDERICK MARCHIONNA*

IN answer to many requests for later information on latex patents than that contained in his book, "Latex & Its Industrial Applications", Mr. Marchionna has prepared brief abstracts of all of the more important U. S. patents on latex from July, 1932, to date and these abstracts will be published in this journal from time to time. The first installment appears below and additional installments will be published as soon as they are made available. Anyone desiring further particulars about any patent or patents may obtain them by sending ten cents for each patent, giving the number only, to the Commissioner of Patents, Washington, D. C. For those desiring to insert abstracts of the latest latex patents in their copies of "Latex & Its Industrial Applications", reprints of this series of articles may be obtained without cost by applying to the publishers for each article as published.

1—PARK—U. S. 1,866,820—July 12, 1932—*Rubber Strips.*
Rubber strips extruded from latex into a coagulating bath and consolidated into plies suitable as tire tread.

2—SEAMAN—U. S. 1,867,633—July 19, 1932—*Aqueous Dispersions.*
Uses boil-off liquors from silk industry as dispersing agent for making artificial dispersions of rubber.

3—CROCKETT—U. S. 1,867,879—July 19, 1932—*Rubber Shoes*

4—CROCKETT—U. S. 1,867,880—July 19, 1932—*Rubber Shoes*

5—CROCKETT—U. S. 1,867,881—July 19, 1932—*Rubber Shoes*
In above three patents bathing shoes are made by dipping a grooved former into differently colored latex dispersions so as to obtain different parts of the shoes differently colored and with decorations, with soles of heavier rubber mixings.

6—NAUNTON et al—U. S. 1,867,970—July 19, 1932—*Coloring Rubber*
Organic dyes are introduced in latex in their intermediate stage, and the color is developed by oxidation or ionization *in situ.*

7—WARD et al—U. S. 1,869,531—August 2, 1932—*Pile Fabrics*
Pile loops are cemented to a fabric backing with latex, and the loops are then opened instead of being cut to produce velvet effects.

8—MacLACKLAN—U. S. 1,869,703—August 2, 1932—*Spray Drying Latex*
An apparatus for dehydrating and drying latex or similar liquids.

9—Baer—U. S. 1,869,734—August 2, 1932—*Synthetic Products*
The reaction product of a halogenated hydrocarbon, such as ethyline dichloride with an earth alkali polysulfide is combined with latex.

10—DREYFUS et al—U. S. 1,870,407—August 9, 1932—*Delustering Textiles*
Cellulose acetate silk is delustered by treatment of white inorganic pigments in the presence of latex.

11—DREYFUS et al—U. S. 1,870,408—August 9, 1932—*Coloring Textile Materials*
Cellulose ester textiles are colored by treatment with graphite suspended in latex—other colors may be used.

12—HILL—U. S. 1,870,567—August 9, 1932—*Leather Substitute*
A porous fibrous web is impregnated with latex and treated with a solution of a vegetable tanning agent.

13—GAMMETER—U. S. 1,870,775—August 9, 1932—*Molded Dipped Articles*
Finger cots, etc., are made by dipping the mold in a latex containing a low temperature accelerator, and the article vulcanized in hot water.

14—DUNLOP RUBBER CO—U. S. 1,870,788—August 9, 1932—*Treating Latex*
Latex is gelled by adding to it non-coagulating substances which decompose at higher temperatures to form a gelling coagulant—examples of substances are ammonium persulfate, trioxymethylene, etc.

15—PRATT—U. S. 1,870,864—August 9, 1932—*Aqueous Dispersions*
Artificial dispersions of cellulose ester mixed with latex.

16—RICE—U. S. 1,870,870—August 9, 1932—*Shoe Manufacture*
An improvement over patents 1,800,405 and 1,800,406 (abstracts 1633 & 1634)*

17—BARNARD—U. S. 1,870,886—August 9, 1932—*Granular Reclaimed Rubber.*
Rubber wastes are treated to remove fibres, dispersed in rubber, diluted and precipitated into granular form by means of alum, etc.

18—EVANS—U. S. 1,870,990—August 9, 1932—*Insulating Conductors.* Apparatus for passing a wire through vulcanized latex upwardly.

19—BATTIN—U. S. 1,871,296—August 9, 1932—*Endless Mandrel.* A mold of the mandrel type for making tubes from latex.

20—GIBBONS—U. S. 1,871,364—August 9, 1932—*Rubber Tubes.* A mold of the mandrel type for making seamless tubes from latex. The mold is made to rotate in the latex.

21—HOPKINSON—U. S. 1,871,412—August 9, 1932—*Weftless Fabric.* Cord or threads to be made into a weftless fabric are subjected to a shrinking treatment in hot water containing alkali hydroxide.

22—WESTCOTT—U. S. 1,871,572—August 16, 1932—*Fibrous Products.* Fibrous webs are impregnated with latex in such a way that one surface thereof has a well defined layer rich in fibres.

23—OFFUTT—U. S. 1,871,731—August 16, 1932—*Plaster Boards.* Boards made largely from gypsum are faced with paper sheets adhered thereto by means of latex.

24—TEAGUE—U. S. 1,872,046—August 16, 1932—*Closure for Containers.* Paper disks for sealing glass or metal containers are coated with a purified creamed vulcanized latex.

25—McGAVACK—U. S. 1,872,161—August 16, 1932—*Preserving Latex.* Latex is treated first with HCHO and then with ammonia so that there is no hexamethylenetetramine formed.

26—WESTCOTT—U. S. 1,873,913—August 23, 1932—*Heat Coagulable Latex.* Latex is stabilized with heat coagulable albuminous substances and coagulated by heating.

27—KONRAD et al—U. S. 1,874,546—August 30, 1932—*Coagulating Latex.* Latices from synthetic rubbers derived from diolifines are coagulated by freezing.

28—WITTE et all—U. S. 1,875,185—August 30, 1932—*Artificial Silk.* Treads are extruded from a viscose-latex mixture into a coagulant to obtain artificial filaments of reduced luster and gloss.

29—ROWLAND—U. S. 1,876,076—Sept. 6, 1932—*Treating Tire Beads.* A cement comprising latex, "Hercosol" (oxidized pine oil) and other ingredients is used to cement tire beads or other articles.

(*) Author "Latex & Its Industrial Applications," published Feb. 1933 by THE RUBBER AGE, N. Y.

(*) See Marchionna's "Latex & Its Industrial Applications."

30—TWISS et al—U. S. 1,877,207—Sept. 13, 1932—*Rubber Tubes.* A tubular core is passed through a latex, and the deposit set.

31—BOWER—U. S. 1,877,426—Sept. 13, 1932—*Seamless Articles of Rubber.* Articles having a number of compartments, such as purses, etc., are made by dipping the multi-sectioned former into latex.

32—FORRER—U. S. 1,878,483—Sept. 20, 1932—*Depositing Rubber.* Latex is treated with heat sensitive stabilizing substances, such as gelatine, albumens, etc., deposited on supporting surfaces, and coagulated by subjecting the deposit to temperature changes to gel and set the latex.

33—UNTIEDT—U. S. 1,880,601—Oct. 4, 1932—*Cellular Plaster Products.* Plaster of Paris and latex are combined in varying proportions in presence of protective colloids, and mixture aerated by whipping it.

34—NIKITIN—U. S. 1,880,975—Oct. 4, 1932—*Creaming Latex.* Latex is creamed with pectin bodies, alginates, etc., and stabilized by addition of water soluble soaps.

35—WATKINS—U. S. 1,881,005—Oct. 4, 1932—*Mold for Rubber Glove.* A mold for gloves is provided with flexible rods as the frame for the finger, on which the forms are given by inserting a rubber glove.

36—TROBRIDGE—U. S. 1,881,253—Oct. 4, 1932—*Ornamented Rubber Articles.* Rubber articles are made by depositing on an embossed former latex of different colors and characteristics.

37—FISHER—U. S. 1,881,436—Oct. 11, 1932—*Expansion Joints.* Latex is added in small quantity to fibre-bitumen mixture to prevent oozing out of the mixture when used in joints.

38—FISHER—U. S. 1,881,439—Oct. 11, 1932—*Packing Joints.* From 2 to 5% of latex, mixed with a bituminous macadam binder containing fillers, retards the flowability of the bitumen.

39—KEMP—U. S. 1,882,081—Oct. 11, 1932—*Electrical Insulation.* Rubber is deproteinized by treating latex with NaCl or by boiling, and mixed with tar and deresinitated gutta-percha.

40—WHITTELSEY—U. S. 1,882,377—Oct. 11, 1932—*Mulching Procedure.* Mulching is carried out by mixing mulch with latex and weed killer, and spreading mixture on soil.

41—FISHER—U. S. 1,882,792—Oct. 18, 1932—*Bonding Pellets.* Granules of seeds, puffed rice and wheat, cork, corn cobs, etc., are spread on a backing support, and latex is sprayed thereon uniformly to bind the pellets.

42—THOMA—U. S. 1,883,106—Oct. 18, 1932—*Shoe Bottom Filler.* Cork or leather grains are mixed with a binder containing tapioca meal, wax tailings, and small quantity of latex.

43—ELLIS—U. S. 1,883,645—Oct. 18, 1932—*Mica Products.* Mica leaves or flakes are coated with latex while in overlapping relation to form sheets of desired thickness used for heat insulation.

44—RHODES et al—U. S. 1,884,240—Oct. 25, 1932—*Bituminous Products.* Water gas tar and/or coke oven tar are combined with crude rubber or latex, and S and mixture heated into a tough, elastic product.

45—FRASER—U. S. 1,885,154—Nov. 1, 1932—*Concentrating Latex.* Latex is concentrated in a special constructed centrifuge.

46—ESMARCH—U. S. 1,885,810—Nov. 1, 1932—*Electrophoretic Processes.* Latex is deposited by an alternating current of average Value = O.

47—ILLIG et al—U. S. 1,885,831—Nov. 1, 1932—*Electrophoretic Processes.* Glycerine or similar liquids added to latex, inhibit gas formation around the electrode during electrodeposition of the latex.

48—GABRIEL et al—U. S. 1,886,334—Nov. 1, 1932—*Aqueous Dispersions.* Aqueous dispersions of bitumen are made by the use of latex as the sole emulsifying and stabilizing agent.

49—LURIE—U. S. 1,886,345—Nov. 1, 1932—*Shoe Stiffener.* Box toes for shoes are made by impregnating a fibrous web with powdered cellulose acetate dispersed in fluid latex or rosin soap.

50—DUNLOP RUBBER CO.—U. S. 1,886,351—Nov. 1, 1932—*Ornamented Rubber.* Rubber deposited from latex on a former is contacted with a mixture of a coagulant and swelling liquid to effect wrinkling of the surface.

51—TWISS et al—U. S. 1,887,190—Nov. 8, 1932—*Dehydrating Rubber Deposits.* See Brit. pat. 303544 (abstract 1840) *

52—DUNLOP RUBBER CO.—U. S. 1,887,201—Nov. 8, 1932—*Treating Latex.* Latex is gelled by adding to it sufficient HCHO in excess to neutralize ammonia, with or without a sensitizer such as NH_4Cl, $ZnSO_4$, etc.

53—SLATER—U. S. 1,887,477—Nov. 8, 1932—*Pile Fabric.* Wool, hair, silk, etc., fibres are forced through a textile base, and the fibre anchored to the base by means of a latex cement.

54—HATHERELL—U. S. 1,887,930—Nov. 15, 1932—*Chewing Gum.* A chewing gum base is made from a purified cumar resin, spray-dried latex, and gliadin.

55—LEVIN—U. S. 1,887,979—Nov. 15, 1932—*Floor Covering.* Loosely felted fibres are needle-punched through a burlap case, and secured thereto adhesively by means of an asphalt emulsion containing rubber dust.

56—SHERRICK—U. S. 1,888,437—Nov. 22, 1932—*Heat Insulating Material.* An aqueous dispersion comprising rubber, bentonite, shellac, and water is used for lining refrigerator surfaces.

57—SCHACHT—U. S. 1,888,410—Nov. 22, 1932—*Composite Product.* A layer of pulped fibres are superposed on a layer of a mixture of pulped cork-fibres, and the material impregnated with latex.

58—RICHTER et al—U. S. 1,888,771—Nov. 22, 1932—*Paper Products.* Sheets of alpha cellulose fibres are impregnated with latex or asphalt.

59—TWISS et al—U. S. 1,889,102—Nov. 29, 1932—*Rubber Threads and Tapes.* Latex extruded in form of round threads which are then flattened.

60—FAUSSE et al—U. S. 1,889,196—Nov. 29, 1932—*Shoe Stiffeners.* A fibrous web is impregnated with cellulose esters—Blanks cut out, skived, and impregnated with latex.

61—GROSKOPF—U. S. 1,889,473—Nov. 29, 1932—*Fibrated Emulsions.* An apparatus for making fibre dispersions in rubber or asphalt.

62—DAVIS—U. S. 1,889,642—Nov. 29, 1932—*Waterproofing Fibres.* Leather fibres are blown into a cylinder, and while in suspension sprayed with latex, and allowed to fall into a coagulant bath.

63—SAEGER—U. S. 1,889,905—Dec. 6, 1932—*Core and Mold Binder.* A mixture of vinyl resin and crude rubber or latex is used as the binder for molding sand.

64—JOHNSON—U. S. 1,890,037—Dec. 6, 1932—*Golf Club Shaft.* A golf club shaft is given a coating of latex containing a solvent so as to obtain a tacky surface.

65—WOOD—U. S. 1,890,242—Dec. 6, 1932—*Electrolytic Diaphragm.* A special organized keratin in fibrous form is mixed with latex and sheeted into thin sheets used as diaphragms in electrolytic cells.

66—THOMAS—U. S. 1,890,345—Dec. 6, 1932—*Bonding Surfaces.* Leather is dried thoroughly, coated with a latex cement, and bonded with a rubber sheet by vulcanization.

67—THOMA—U. S. 1,890,473—Dec. 13, 1932—*Shoe Filler.* A thin layer of the shoe filler described in U. S. Pat. 1,883,106 is applied to the shoe cavity; a burlap fabric layed thereover, and further quantity of filler spread thereon.

68—WILLIGEN—U. S. 1,890,476—Dec. 13, 1932—*Floor and Wall Covering.* A mixed emulsion of linoxyn, asphalt, and latex is combined with aqueous dispersions of filler materials, and the dehydrated mixture used as floor covering.

69—DUNLOP RUBBER CO.—U. S. 1,890,578—Dec. 13, 1932—*Treating Latex.* Latex is gelled with small quantities of a phenol with or without formaldehyde or other tanning agent.

70—RICHTER—U. S. 1,891,027—Dec. 13, 1932—*Leather Substitute.* A paper from alpha cellulose fibres, or from mercerized fibres is impregnated with latex—the absorption of paper is increased by chemicals.

71—McKELLIP—U. S. 1, 891,566—Dec. 20, 1932—*Rings for Radio Diaphragms.* A latex impregnated paper of alpha cellulose is corrugated and used as supporting hinge ring for sound reproducing diaphragms.

72—KEMP—U. S. 1,892,279—Dec. 27, 1932—*Submarine Cable.* The deproteinized rubber of pat. 1,691,065 is combined with a "depolymer" of pine oil, and used as insulating material for submarine cables.

(*) See Marchionna's "Latex & Its Industrial Applications."

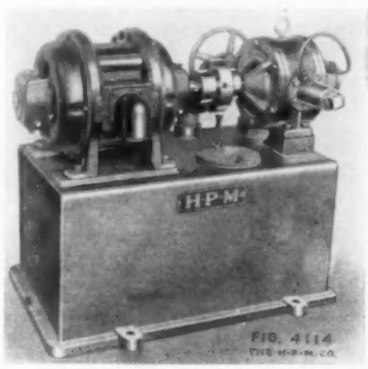
(To Be Continued in Next Issue)

New and Improved
Machinery and Equipment

H.P.M. Hydro-Power Unit—Falk Geared-Head Motoreducer — Scott Plastometer — Quick Stopping Motor — Bias Cutter Hydro-Feed—Tramrail Crane

Power Units for Hydraulic Machine Drives

TO FACILITATE the application of the new H-P-M Radial Oil Pressure Pumps to various types of hydraulically actuated machines, such as the H. P. M. Hydraulic Presses described on page 259 of our September issue, a line of standardized H-P-M hydro-power units



H.P.M. Hydro-Power Unit

has been developed by the Hydraulic Press Manufacturing Company, Mount Gilead, Ohio.

Each Hydro-Power unit incorporates a radial pump pressure generator, direct driven from an electric motor through a flexible coupling. Both pump and motor are mounted on a completely enclosed base which also serves as a reservoir for the oil used as pressure fluid and lubricant. This reservoir is equipped with all essential accessories including removable end cover, covered filling strainer, air vent filter, level gauge and drain valve. It is also fitted to take a copper coil for cooling water circulation when operating conditions require auxiliary oil temperature regulation.

The pressure output of the radial pump is regulated by an automatic control which may be adjusted for any valve within the operating limits up to 3000 pounds per square inch. A modified form of this control is provided with a second adjustment whereby the volume of pump discharge may be regulated to any amount from zero to maximum.

This type of power unit provides a single stage of high pressure capacity up to 3000 pounds per square inch or a medium pressure up to 1500 pounds, depending upon the radial pump employed.

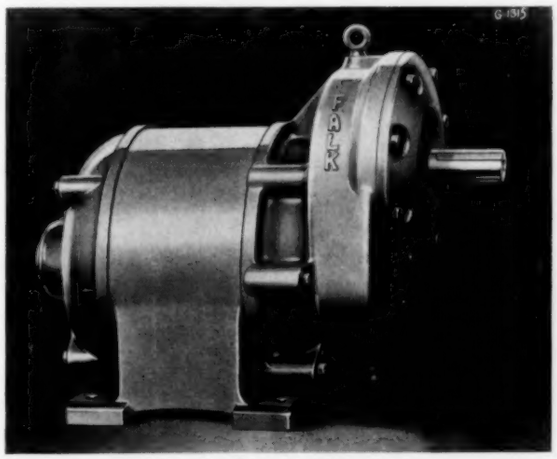
When initial work or closing movements are to be performed at low pressure, a two-stage Hidro-Power unit is recommended. This incorporates two pressure generating pumps, i.e., the high or medium pressure radial pump as mentioned above, plus a low pressure rotary pump to provide larger volume for the initial portion of the operation.

When the low pressure limit is reached its output is bypassed at zero pressure by an automatic unloading valve which functions without shock or chatter.

Each machine served by one of these Hydro-Power transmissions becomes a flexible, independent production unit. Pressure loads are individually and automatically regulated to the work at hand; power consumption is likewise held to a minimum in close proportion to work performed, which is not true with group hydraulic drives from central accumulator systems.

Geared-Head Motoreducer

The Falk Corporation, Milwaukee, announces the Geared-Head Motoreducer, illustrated herewith. It is a combination of motor and gear unit, especially designed for relatively low ratios, both speed reduction and speed increase. It makes possible the use of high speed motors instead of the more costly low speed type and provides



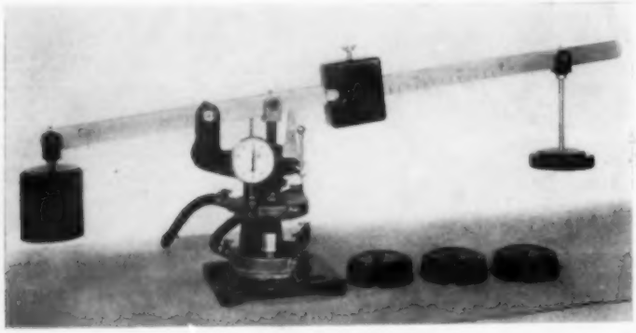
Geared-Head Motoreducer Complete with Motor

any desired speed from one-ninth motor speed to about two and one-half times motor speed.

This variation of speed is secured with a simple single-pair gear train—a construction which the manufacturer claims gives the utmost in simplicity, rigidity and compactness. The unit is said to be very quiet and highly efficient.

New Model Scott Plastometer

The Plastometer illustrated herewith, just brought out by Henry L. Scott Co., Providence, R. I., is a new model arranged to apply loads of from 0 to 100 pounds upon the specimen. It is provided with plates of the same pattern as are used on the Scott Plastometer for smaller pressures.



Scott 0-100 Pounds Plastometer

The application of the load is through a single beam graduated 0 to 20 pounds, with weights to be added to increase this load. The construction design is such that its maker considers it inadvisable to attempt more than 100 pounds maximum of spindle load on this model. The simple and practical arrangement makes it ideal for routine work, or for experimental purposes in the laboratory. Scott Plastometers of other forms to a maximum of 1000 pounds pressure on the specimen are also available.

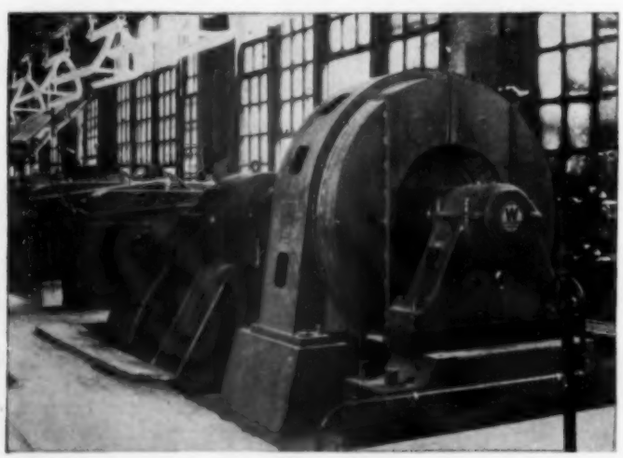
Quick Stopping Rubber Mill Motor

BUILDING a one thousand-horsepower motor that can be brought from full speed to a dead stop in one and one-quarter seconds or three and a half revolutions so that the huge rolls of rubber mills will stop quickly, is the latest development of engineers of the Westinghouse Electric and Manufacturing Company, E. Pittsburgh, Pa.

The rotating element of this motor weighs more than three tons and turns with a speed of 514 revolutions a minute. The motor, which is the largest motor ever built for such quick stopping, is being furnished the Goodyear Tire and Rubber Company plant at Akron.

With the rolls travelling at a speed of 19 inches a second, they must be stopped quickly in case of emergency to avoid injury to the operator. By stopping the driving motor in three and one-half revolutions, the rolls travel only nine inches after the current is shut off. The stopping switch is a continuous strip, shoulder high and running the length of the mill. A worker need only touch the switch with his head, shoulder or free arm to stop the mill.

Dynamic or electrical braking is the means used to stop the motor quickly. When the stop switch is touched the motor windings are closed through resistance grids where the electrical energy stored in the rotating mass is dissipated in the form of heat.

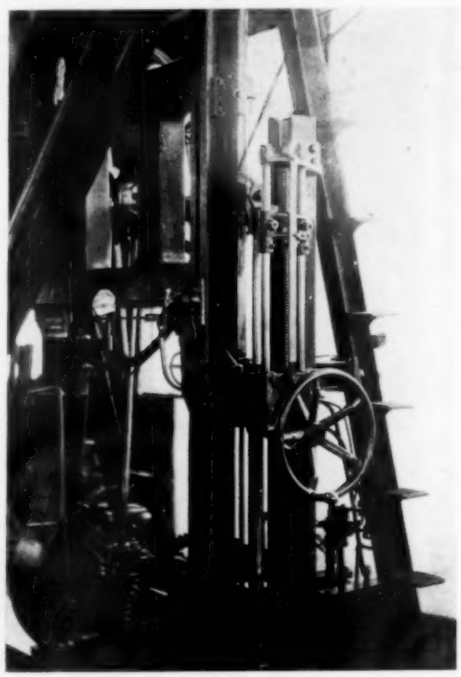


Westinghouse Quick-Stopping 1000 H.P. Mill Motor

Hydro-Feed for Vertical Bias Cutter

The Spadone Machine Co., New York City, has just brought out a new device, called the Hydro-Feed, attachable to the Vertical Bias Cutter, for permitting either continuous or selective cutting and greatly increases the accuracy of cutting. The device also provides a quick method of changing the width of plys without retarding the speed of the machine.

To change the width of ply, the operator merely turns the hand wheel, which moves the indicator on the scale. For continuous cutting, the indicator is set at a given point and the machine cuts accordingly. For selective cutting, the indicator is moved after each cut to any other graduation, without stopping the machine, and each ply is of a different width.



Showing Application of Spadone Hydro-Feed to Bias Cutter

A slight turn of the hand wheel moves the indicator over a wide range of scale graduations, so plenty of time is allowed the operator between cuts to change widths from one reading to another.

The Hydro-Feed is a complete self-contained unit and can be applied to either a rack or segment drive machine. All parts are attached to the Bias Cutter and no additional floor space is required. It is simple in design and easily installed. In operation it gives a greater cutting flexibility than before adapting the Vertical Bias Cutter for continuous production or direct fabrication methods of tire building.

Cleveland Tramrail CHS Crane

THE Cleveland Tramrail Division of the Cleveland Crane and Engineering Company, Wickliffe, Ohio, has placed on the market a new line of cranes and transfer bridges of lighter weight, suitable for loads up to one ton where the bridge span is not over sixteen feet. These units do not sacrifice any strength, rigidity or ease of operation.

Tramrail Crane

They are suitable for hand propelled carriers, either with or without chain or motor operated hoists, and operate on runways of Cleveland Tramrail standard rail or arch beam. These are designated as the Type CHS or CHSE Crane and the THS or THSE Transfer Bridge.

These cranes and transfer bridges are constructed of a proper length section of Tramrail eight inch arch beam rail, used as the crane bridge, and standard Cleveland Tramrail one ton hand propelled carriers as the end trucks, which are keyed to the beam in such a manner as to prevent misalignment at all times. The short wheel-base of the end trucks and the five inch minimum bridge overhang give close approach to the end of the runways and close bridge clearances. Electrical fittings can be added at any time to change the system from one using chain hoists to one using motor operated hoists.

A.S.T.M. Approves Changes in Rubber Specifications and Accepts New Method of Test

THREE proposed standard methods of testing rubber products and revisions in two specifications have been approved for publication as tentative by the American Society for Testing Materials. The testing methods cover rubber belting used for power transmission and rubber hose of wrapped and braided construction. The specifications in which revisions were tentatively approved cover insulated wire and cable: 30 per cent Hevea rubber (D 27—31 T) and wire and cable: performance rubber compound (D 353—32 T).

The methods of testing wrapped hose and braided hose were prepared by Committee D-11 following its policy of first standardizing methods of test used for rubber products before sponsoring detailed product specifications of the materials type. It is felt that test methods for evaluating rubber products require further standardization before satisfactory product specifications can be written. As far as possible the committee will develop and include tests of the performance type. The standard specifications for wrapped hose and for braided hose were withdrawn.

The specifications for rubber belting for power transmission were withdrawn several years ago. The committee submitted the methods of test and a classification of the various types of transmission belting in partial replacement of these specifications.

The revisions in the insulated wire and cable specifications include a new section on Cotton Braids which will replace the existing section on braids, the substitution of the former table on width and over-lap of rubber-filled cable tape which had appeared in the specifications in 1928, a rearrangement of certain material between the specifications and other minor changes.

Committee D-11 is forming two new subcommittees, one on Adhesion Testing for Rubber Products under the chairmanship of J. J. Allen, Chief Chemist, Mechanical Rubber Goods Division, Firestone Tire and Rubber Co., and another on Tests for Volume Increase of Rubber in Liquids under the chairmanship of O. M. Hayden, Manager, Rubber Laboratory, Dyestuffs Department, E. I. du Pont de Nemours & Co. The first group will develop test methods for measuring the adhesive strength of rubber to metal, since this problem is of particular importance in the rubber and automotive industries.

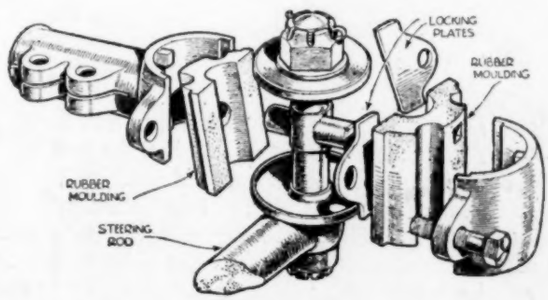
The second subcommittee will concentrate its activities on the development of suitable tests for comparing the swelling properties of rubber compounds which are to be subjected to the action of oils or various solvents.

Rubber-Cushioned Steering Joint

A NEW rubber-cushioned steering joint has been produced by the "Adamite" Safe Steering Joint Co., of Gamlingay, Sandy, Bedfordshire, England, according to a recent issue of *The Light Car & Cyclecar*.

The joint consists essentially of a split housing surrounding a pair of rubber moldings, between which a tee cross-pin is mounted. By means of spigots and locking-plates, which can be clearly seen in the accompanying sketch, the rubber moldings are held immovable in the housing. The tee cross-pin is also stationary. The whole turning movement, normally taken up by the ball-and-socket joints, is therefore dependent on the flexibility of the rubber.

It is claimed by the manufacturers and patentees that no wear is possible in the joint, that wobble and "steering



Adamite Joint "Exploded" Into Its Component parts

wander" are not transmitted to the steering wheel, and the joint needs no lubrication or other attention.

It may be thought that the steering would be stiff if these joints were used, but a demonstration showed there is no stiffness at all.

The joints are made in sizes suitable for use on any make of car, and can be fitted without alteration to existing steering arrangements.

Editorial Comment

"Buy It Now" Campaign

RUBBER manufacturers are bound to be interested in the outcome of the "Buy It Now" campaign instituted by the NRA administrator Hugh S. Johnson last week. If the campaign is a success a large portion of accumulated supplies of tires, footwear and other rubber products will move from stock shelves. If not, unemployment is bound to increase. It must be borne in mind, however, that the success of the campaign is not entirely up to buyers. Manufacturers must cooperate by offering their wares at such attractive prices that the buyer cannot help but act. To get the buyer to act advertising appropriations must be increased. Tire manufacturers are large national advertisers and probably plans already have been made to increase their expenditures during the next few months. There are other rubber products, however, with novelty and appeal which are seldom seen advertised. The manufacturers of such products should not be guided entirely by their past customs but should take their cue from the needs of today and should go out aggressively for new business by advertising some of those products whose sale has been left almost entirely to the distributor and retailer. General Johnson aptly says: "In order to increase sales two courses of action are essential. First, give the public attractive, up-to-date merchandise, fairly priced, and, second, aggressively promote your products to the public. The modern method is advertising."

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Endowment for Rubber Research

THE decision of the British Government to make an annual grant for rubber research in Great Britain has met with great satisfaction in that country. The Research Association of British Rubber Manufacturers, whose activities had been stopped for lack of support from the Government, will now be able to resume work immediately. In the United States we do not have any research organization similar to that of the British rubber industry, our activities in that direction being taken care of by the individual research laboratories of the larger rubber companies and by the Bureau of Standards in Washington. Unfortunately, that Bureau has fallen on hard times and due to the decree of the Government to cut expenses, the excellent rubber research staff of the Bureau, built up over a period of years, has been practically disbanded.

This is hardly a time to suggest the expenditure of more money on the part of the rubber industry but it would seem that an added investment in research is decidedly worthwhile at any time—today as well as in times of greater prosperity. We cannot help but feel that a sufficiently large fund could be collected annually in the rubber industry either to continue the rubber research activities of the Bureau of Standards or to endow a separate centrally located laboratory. If both large and small rubber manufacturers were to make a small annual payment based on a percentage of their sales volume or on any other suitable basis, enough funds could be guaranteed to establish such a Research Association.

The scope of such an organization need not be limited to research for it could aid manufacturers by acting as a clearing house for all sorts of technical or even statistical information on the rubber industry. It could contain copies of all published books and literature on rubber—much of which would undoubtedly be donated. There is a real need for an institution or association of this nature in the rubber industry and THE RUBBER AGE hopes that steps toward organizing it may be taken in the near future. Expressions of opinion on the plan will be welcomed by the Editor from any interested members of the industry.

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Completion of the Rubber Code

THE rubber industry is to be congratulated on the completion and submission of Fair Competition Codes for the tire industry and for the balance of the rubber industry. A mighty big job has been completed and a reading of the only available code—that of the rubber industry, reveals that many mooted problems of the past have been overcome successfully. We cannot help but believe that the rubber industry has accomplished something in the preparation of the code, which will, in the future, be looked upon as the cornerstone of a new era, the beginning of a new spirit of cooperation between the various conflicting factors in the industry.

Long after the NRA is forgotten, the result of the industry's deliberations will be felt. Under former conditions it was not possible for any appreciable number of rubber manufacturers to get together to talk over the ills of their industry. Today this is an accomplished fact and whether or not any appreciable immediate good comes of the code, a permanent foundation has been laid by the agreement on underlying principles of labor, wages, selling practices, costs, etc.

CURRENT • NEWS
of the Rubber Industry
OCTOBER, 1933

Revised Code for Tire Industry Submitted; —Code for Balance of Industry Also Filed

Tire Code Filed October 2 and Rubber Code on September 26 — Newton D. Baker Dropped As Arbitrator—Nine Divisions Covered by Rubber Code.

AFTER several months of many much-publicized conferences, a revised Code of Fair Competition for the Tire Industry was filed with the National Recovery Administration on October 2. The original code, filed on July 29, was objected to so strenuously by various tire companies, that it was withdrawn and since almost entirely revised. Although the terms of the code have not been made public, official announcement of its receipt has been made by NRA officials but the date for open hearings has not been announced.

In the original code a Code Authority was set up which made Newton D. Baker, former Secretary of War, the arbitrator in all matters of dispute with relation to the various units of the industry in the administration of the code. Announcement has been made of the appointment of L. D. Tompkins, vice president of U. S. Rubber Company, as industrial advisor for the tire industry in handling codes.

The new code provides that the Code Authority shall consist of eleven members, not more than three of whom (without vote) shall be representatives of the National Recovery Administration and appointed by the President, and eight of whom shall be selected by the industry according to such rules as it may determine, provided that no two members of the Code Authority shall be affiliated with any single member of the industry. In the revised code there is no mention of Mr. Baker acting in any capacity for the industry.

The hours of labor and wage provision are substantially the same in the revised code as in the original code submitted, except, that in the new code employees are permitted to work a total of 104 hours per year in excess of the maximum hours, whereas, the original code permitted employees to work 124 hours over the annual average to provide for peak production demands.

Code for Other Divisions

The other code, that for the balance of the rubber industry exclusive of tires, covers the following divisions: Automobile Fabrics, Proofers and Backers, Rubber Flooring, Rubber Footwear, Hard Rubber, Heels and Soles, Mechanical Rubber Goods, Sponge Rubber, Rubber Sundries and Rainwear.

This code provides for the election of Code Authority Committees by each of the nine divisions, the chairmen of which constitute a Rubber Code Authority of nine with the addition of not more than three representatives of the NRA, the latter to be without voting power. The president and the general manager of the Rubber Manufacturers Association are ex-officio members of this authority, without voting powers, with the general manager of the Association acting as chairman of the Code Authority Committee. Alternates from each division are selected to act in case of the absence of the Division Chairman or if the Division Chairman is prevented from acting on the Code Authority by virtue of any contemplated action involving the company with which he is connected.

The duties of the Code Authority include investigating observance of the code, studying trade practices, presenting recommendations to the NRA administrator, securing reports from members of the industry on labor, wages, plant capacity, production, shipments, fair practices, industrial relations, statistics, etc., establishing new divisions, and coordinating the administering of the code.

The Code Authority Committees of each division are elected by each division, the number and basis of representation to be determined by the division. Following is the number of members of which each divisional committee will consist, as indicated in the separate codes for each division: Automobile Fabrics, Proofers and Backers Division, Hard Rubber Division, Heel and Sole Division, Rubber Sundries Division, 5 each; Rubber Flooring Division, Footwear Division, Mechanical Goods Division, Sponge Rubber Division, 3 each; Rainwear Division, 8 members.

The duties of the Divisional Authority Committees are to make investigations as to the functioning of the code, study trade practices, adjust complaints and coordinate activities of sub-committees.

In addition to the labor guarantees required by the National Industrial Recovery Act, the proposed code contains a section permitting employers to "exercise their right to select, retain, or advance employees on the basis of individual merit, without regard to their membership or nonmembership in any organization." This is the much discussed "merit clause" also included in the Automobile Code, and is likely to cause opposition on the part of NRA officials.

40-Hour Week Established

The code establishes a maximum working day of eight hours and a maximum work week of 40 hours, with the provision that each employee may work a total of 120 hours annually in excess of the maximum. Maintenance men, engineers, shipping crews, etc., would be permitted to work a maximum of 48 hours a week. Salaried employees receiving more than $30.00 a week and outside salesmen would be excluded from the maximum hours provisions.

Minimum wages of $14.00 for a 40-hour week or 35 cents an hour are proposed, with a separate minimum of 40 cents an hour for male workers and 30 cents an hour for female factory workers in heel and sole and rubber sundries plants. Minimum weekly pay for salaried employees would range from $15.00 in the trade area of cities of more than 500,000 population to $12.00 in towns of less than 2,500 population.

Costs, under the terms of this code, are to be determined under the methods advocated in the Rubber Manufacturers Association Accounting Manual or revisions of

Hollyhocks Latest Source of Rubber

The latest source of "synthetic rubber," according to a United Press dispatch from Boulder, Colorado, is the hollyhock flower, a biennial species of the mallow family. Mrs. Jean Anderson, a former teacher of chemistry at Columbus, Ohio, is reported to have produced synthetic rubber, a sample of which was sent to a concern manufacturing typewriter platens which reported the "rubber" to be valuable if produced cheaply in quantities. It is said that Mrs. Anderson holds a number of patents, among which is one on synthetic marble.

that manual. No product may be sold at a price or upon such terms as will result in the customer paying less than the seller's cost of production and distribution. An exception is made in the case of seconds and obsolete goods which may be marketed on such terms as the Divisional Authorities may approve.

This code will, after the required hearings, become effective on the second Monday after it is approved by the President, and will continue in effect until June 16, 1935, or sooner if the government declares the emergency recognized by Section 1 of the National Industrial Recovery Act has ended.

(It is not possible, within the space limitations of this publication, to give the complete details of each division's code, but THE RUBBER AGE will be glad to supply to any reader who requests it, a copy of the complete proposed Code of Fair Competition for the Rubber Manufacturing Industry. A letter addressed to the Editor, THE RUBBER AGE, 250 West 57th Street, New York City, will bring a copy by return mail.)

Tire Code Authority of Eight

On the tire industry code, although it has not been made public, it is understood that the eight industry members of the Code Authority are:

E. D. Levy, *Fisk Rubber Corp.;*
H. S. Firestone, *Firestone Tire & Rubber Company;*
P. W. Litchfield, *Goodyear Tire & Rubber Company;*
William O'Neil, *General Tire & Rubber Company;*
James D. Tew, *B. F. Goodrich Company;*
Charles Borland, *Mohawk Rubber Company;*
C. C. Gates, *Gates Rubber Company;*
Ervin Eisbrouch, *McClaren Rubber Company.*

Alternates are said to be:

A. A. Garthwaite, *Lee Rubber & Tire Corporation;*
F. B. Davis, *U. S. Rubber Company;*
F. A. Seiberling, *Seiberling Rubber Company;*
J. A. Walsh, *Armstrong Rubber Company;*
W. O. Rutherford, *Pennsylvania Rubber Company;*
J. A. MacMillan, *Dayton Rubber Company;*
G. W. Stephens, *Mansfield Tire & Rubber Company;*
J. W. Whitehead, *Norwalk Tire & Rubber Company.*

One of the startling provisions of the code is reported to call for the cancellation of all national account contracts, which the National Tire Dealer Association has been urging for years. It is understood that this will mean cancellation of all such contracts and new contracts made on a mileage contract basis.

A much discussed feature of the tire code is said to be one which will permit the smaller tire companies to sell at a lower price than the larger companies so as to offset the supposed advantages of large scale production. For this purpose four classes of manufacturers are specified: those with annual sales of $15,000,000 or above; those with sales between $6,000,000 and $15,000,000; those with sales between $2,000,000 and $6,000,000, and those with sales below $2,000,000. A differential of 5% is set between each group, thus giving the companies in the last group a 15% advantage over those in the first group.

In the labor provisions, it is reported that the "merit clause," similar to that in the rubber and the automobile industry code has been included. (See above.) It is believed that there may be opposition to this clause on the part of labor and NRA officials for General Johnson, NRA Administrator, has said that it would not be permitted in any more codes.

In place of output allocation it is believed that a cost control plan was recommended to stabilize the market and to prevent distinctive prices. However, as the development of such a plan would take some time, it was recommended to declare a truce or status quo condition in the industry for the time being. The Tire Code Authority is to submit a plan for market stabilization based on cost control, which plan is to become a part of the code if approved by NRA officials.

It is understood that Article seven on Marketing provides:

Elimination of false, misleading advertising; the marking of all casings according to standards showing the number of plies; a ban on false financial statements relating to competitors, or disparaging statements about competitors; a ban on false invoicing by predating or postdating sales; and a requirement that new prices, when imposed, shall go into effect at 12:01 a. m. on the date following announcements.

It provides, further, that spring dating under the old rules shall be permitted; that there shall be no reinstatement of cancelled orders if a price change has intervened; that "seconds" shall be sold to employees only; that obsolete lines may be sold only under prescribed regulation; that a dealer's price can be given only to a buyer who resells 75 per cent of his purchase.

That no manufacturer may purchase tires from a dealer of another; that no test tires shall be given away; no mileage guarantees allowed; no bribes or gifts permitted to gain sales; no dealerships shall be purchased; no price guarantees given by contract for more than 10 days, and that standards of construction shall be observed.

Article eight is said to provide that each manufacturer shall seek at once dealer contracts guaranteeing "fair practice" provisions, and that monthly each manufacturer shall report the number of customers who sign such contracts.

GOODYEAR DISPOSES OF MODEL TEXTILE TOWN

In a deal completed recently, the Goodyear Tire & Rubber Co. was reported to have sold its model textile town of Goodyear, Conn., to a group of eastern capitalists for approximately $2,000,000.

The town which is built around the plant of the Goodyear Textile Mills, Inc., was formerly known as Killingly. It was acquired by Goodyear in 1914 and was rebuilt into a modern factory town. Until about a year ago the plant furnished most of the fabric used in making tires at the Akron plant. With the acquiring of a new textile plant in Georgia the machinery was moved to the new location and the Connecticut plant was allowed to become idle.

The town consists of one four-story mill, 218 dwelling houses, a seven-story warehouse, a bank and a 40-room hotel.

New Goodrich Battery

A new type automobile storage battery, known as "Electro-Pak", is announced by the B. F. Goodrich Company. The principal features of the new battery, according to Goodrich engineers, are a higher resistance to short circuits, corrosion and power leakage.

NEW STRUCTURE BUILT BY PHILLIPS-BAKER

With the completion of a new cementing unit, the plant of the Phillips-Baker Rubber Co. in Providence, R. I., has become a modern two-story brick factory group.

The plant was formerly occupied by the Bourne Rubber Co., and consisted of a collection of wooden structures. The Phillips-Baker Rubber Co., which succeeded the Bourne organization, under the direction of Charles H. Baker, vice president and general manager, has gradually remodeled the buildings until now there is a compact and attractive modern factory of steel and brick. This is practically the only rubber manufacturing company in Rhode Island making rubber footwear, since the abandonment of that branch of the rubber industry by the United States Rubber Co., at its plants in Bristol and Woonsocket.

The new cementing house, which was planned so as to harmonize with the other factory buildings in outward appearance, is of brick and steel and is provided with windows that will automatically open, giving vent to prevent damage, in case of explosion of materials used in the course of manufacture. A system of ventilation and humidification is provided, together with facilities for the comfort and convenience of the workers.

The new unit affords an opportunity for better distribution of work and overcomes previous crowded conditions.

The factory, which employs 650 workers, is now busy in the manufacture of rubber footwear. Since the promulgation of the recent decree forbidding the dumping of Japanese-made footwear in the United States, an improvement has been noted in the conditions pertaining to the manufacture and sale of tennis shoes, which were formerly supplied to the American market from Japan at prices which could not be met in competition.

HUBER LEASES MAGNOLIA CARBON BLACK FACTORY

The J. M. Huber Co. of La. Inc., carbon black producing subsidiary of J. M. Huber Corporation, has recently taken over the operation of the Skellytown factory of the Magnolia Petroleum Company. The plant has been shut down for some time undergoing repairs and alterations. It is now in operation producing Specification Black under the same system in use at the other Huber factories, located at Borger, Texas; Swartz, La. and Lance Creek, Wyoming.

Rubber Unions Continue to Grow

The labor unions continue to gain in number in the rubber industry in Akron according to reports. Labor officials estimate that between 10,000 and 15,000 workers have joined the rubber unions. Charters have been granted recently to Goodrich, Goodyear, Buxbaum, R. C. A., and Seiberling unions. Even women workers are said to be joining.

An interesting development of this movement is the investigation of labor costs in rubber factories which the unions are making for presentation at the rubber code hearings in Washington. Wilmer Tate, executive secretary of the Central Labor union has been named to represent labor at the hearings.

New York Rubber Group Holds Exhibit of New Rubber Products—Five Papers Presented

Over 100 Different Products Shown at Exhibit of New Rubber Goods—158 Members Also Hear Five Short Papers by Technologists—Meeting Highly Successful

WHAT promises to be the forerunner of similar events regularly in the future took place on October 6 at the Club Rooms of the Building Trades Employers Association in New York City when the New York Group, Rubber Division, A. C. S., held a large and interesting exhibit of over 100 new rubber products in connection with its program of the evening. The innovation was voted a great success by the 158 members present for it was the first opportunity many had had of actually seeing many of the newer applications of rubber developed in the past few years.

The exhibit, spread over fourteen tables included such items as rubber printing plates, Thiokol compounded mechanical goods, road markers, latex and "latox" insulated wire and cable, raincoats in all the newest fabric constructions, Plioform products, balloon fabric materials, anode covered metal products, rubber-to-metal automotive accessories, rubber corsets, toys, drug sundries, garden hose, rubber backed carpet, railcar wheels, rubber valve stem inner tubes, rubber supports, footwear, products made with odorants, etc. The complete list of products and the concerns who supplied them appear at the end of this article.

In addition to the exhibit, the program consisted of five short papers as follows:

"Automotive Rubber," by Kurt Saurer, *Firestone Tire & Rubber Company.*
"Plioform," by Dr. L. B. Sebrell. *Goodyear Tire & Rubber Company.*
"Latox Insulated Wire," by C. R. Boggs, *Simplex Wire & Cable Company.*
"Recent Developments in the Proofing Industry," by A. F. Schildhauer, *E. I. du Pont de Nemours & Company, Inc.*
"Rubber Printing Plates" by August Becker *President, August Becker Company.*

Mr. Saurer, in his talk on automotive rubber, demonstrated by means of a small motor the lessened transfer of vibration and noise when the motor is insulated from its support with rubber. He told of the uses of rubber in automobiles to reduce noise and vibration and to make motoring more comfortable. Rubber motor supports, muffler cut out supports, bumpers, shock insulators and universal joint blocks were just a few of the many rubber parts used in the modern automobile, said Mr. Saurer.

Dr. Sebrell described briefly the method of manufacture of Plioform and then showed by means of slides the many properties and characteristics of plioform as compared to other products on the market. The paper was a condensed version of the one the author presented on the same subject at the recent Chicago meeting of the Rubber Division.

Mr. Boggs exhibited a large line of the new "Latox" insulated wires, made with vulcanized latex. His talk described the method of manufacture and the properties of this type wire.

Mr. Schildhauer gave an interesting resumé of the many difficulties encoun-

Views Showing Exhibits at Meeting of New York Group

Photos by Bailey

tered in making some of the novel imitation leathers and suedes which had been developed in the past few years to meet a demand for lower priced goods. The exhibit included samples of these materials and a number of finished garments.

Mr. Becker, head of one of the few concerns in this country printing from rubber plates, covered briefly the steps necessary in using rubber printing plates and explained the effects obtained by this method of printing.

A rising vote of thanks was given to the Program Committee for the success of the meeting. The committee consisted of Bruce Silver, chairman (*N. J. Zinc Co.*); Carl J. Wright (*General Atlas Carbon Co.*); Dr. W. F. Tuley (*U. S. Rubber Co.*); Pete Murawski (*du Pont Rubber Chemical Div.*); A. F. Schildhauer (*du Pont-Fairfield*); W. M. Morse (*India Rubber World*); Dr. G. D. Kratz (*Consultant*); W. B. Wiegand (*Binney & Smith*); J. M. Ball (*R. T. Vanderbilt Co.*); W. L. Sturtevant (*Raybestos-Manhattan, Inc.*).

List of Exhibits

Following are the names of the concerns who cooperated by furnishing the products listed:

DAYTON RUBBER MFG. CO., Dayton, Ohio.
Yellow road markers; white road markers; vibration damper; cog belts, plain Dayton belts.

RAYBESTOS-MANHATTAN, INC., Passaic, N. J.
Original equipment—hard molded pulp break lining segment; auto break blocks; condor industrial V belts; condor whipcord transmission belts; Thiokol base gasolene discs; Duprene base diaphragm; Duprene base gasolene cups; high-dro folded and compressed brake linings, replacements; woven break linings, replacements; abrasion grinding wheels; auto clutch facings; Duprene base discs and sheets; rayco flexible break linings, replacements; silver edge flexible molded break linings, replacements; Thiokol base, Thiokol face leak clamp gaskets; low tension rubber belts; condor conveyor belts; Thiokol base sheets with and without fabric; Thiokol base gasolene and oil connections for floating power; die-pressed segment brake lining set.

VULCANIZED RUBBER CO., New York City.
Cigarette holders; cigar holders; percolator handles; soda fountain nozzles; soda fountain feet; pipe stem.

MILLER RUBBER PRODUCTS CO., Akron, Ohio
Anode rubber covered milk bottle carrier; anode rubber covered dish drainer.

ARROW PRODUCTS CO., INC., Watertown Mass.
Arrolastic girdles.

AMERICAN ANODE, INC., Akron, Ohio
All rubber corset made by electrode position.

MAXWELL RUBBER PRODUCTS CORP., Newark, N. J.
Toy circus; toy soldiers; toy blocks; toy animal cutouts; teethers.

DAVOL RUBBER CO., Providence, R. I.
Anti-colic nipples, red, black and amber; hot water bottles; laboratory flask caps.

SURGICAL DRESSINGS, INC., Boston, Mass.
Sterilastic crepe bandages.

VULCAN PROOFING CO., Brooklyn, N. Y.
Newspaper impression blankets; offset lithographic blankets.

B. F. GOODRICH CO., Akron, Ohio.
Rubber mats; art rattan hairlock cushion; spiral wrapped continuous length hose.

E. I. DU PONT DE NEMOURS & CO., Fairfield, Conn.
Cavalite raincoat; perforated corset; Duprene coated laboratory apron; sample book of Duprene coated fabrics; rug anchor; brown sponge.

BARR RUBBER PRODUCTS CO., Sandusky, Ohio.
Timmie rubber blocks for children.

HOOD RUBBER CO., Watertown, Mass.
Yellow mandian coat (suede cloth).

BINNEY & SMITH CO., New York City.
Fumonex all rubber hose; collodial micronex for latex dispersion.

E. K. HOWE & SONS, New York City.
Railway wheel and tire; photograph and drawings of wheel.

PREMO RUBBER BRUSHES,
Photographs.

U. S. RUBBER CO., New York City.
Tire Products:
Royal airplane; tempered rubber super balloon, airplane tail-skid, "cut back" of Royal shock ply H S tire; vented inner tube; rubber valve stem; Eger interchangeable valve; motor supports.
Mechanical Goods:
Cord hose; matchless steam hose; non-tarnishing rubber tubing; oil-resisting gaskets.
Clothing:
Swatch book of naugahyde; latex slicker; suede coat; sport jacket; white rubber coat.
Footwear:
Sport shoe with stuck-on leather-like sole; Keds with shock-proof insole; new style gaiter.
Sundries:
U. S. fountain compact; "Multipore" reducing corset.
Latex Wire:
Several types and constructions.

GIVAUDAN-DELAWANNA, INC., New York City.
Products containing rubber deodorant; Hood, "Xtrulock Hykeshu"; Maxwell rubber toys: Hood,—"shuglov"; Kleinerts, baby pants, "Soflex". Exhibit also included a number of photographs.

GOODYEAR TIRE & RUBBER CO., Akron, Ohio.
Single-ply balloon fabric used in bottom of Stratisphere balloon; two ply plane straight balloon—net fabric; gas cell fabric used in U.S.S. Macon; three ply balloon fabric used in very large army and navy envelope also floatation bags; two ply balloon fabric used in special balloons; railcar wheel.

FIRESTONE TIRE & RUBBER CO., Akron, Ohio.
Black radiator hose; red radiator hose; red hi-speed fan belt; flat fan belt; floating power mounting; various automotive products; all rubber valve stem; innertube; railcar wheel.

AUGUST BECKER CO., Brooklyn, N. Y.
Rubber printing plates and samples of printing.

COLUMBIA ROPE CO., Auburn, N. Y.
Coroco tire chains made of rubber.

SIMPLEX WIRE & CABLE CO., Cambridge, Mass.
"Latox" insulated wires and cables.

LEA FABRICS, INC., Newark, N. J.
Rubber backed carpet; window channel material.

The next meeting of the N. Y. Group will be held about the middle of December at which time, in addition to the election of new officers and executive committee, the famed annual "Christmas Party" will be held.

SHIPMENT OF TIRES DECREASED IN JULY

Shipments of pneumatic casings for the month of July amounted to 5,497,191 casings a decrease of 12.8% below June but was 128.7% above July, 1932, according to statistics released by the Rubber Manufacturers Association, Inc.

This organization reported production of pneumatic casings for July to be 5,713,626 casings, a decrease of 6.3% under June but was 58.0% above July, 1932.

Pneumatic casings in the hands of manufacturers July 31 amounted to 6,844,006 units, an increase of 3.5% as compared with June 30 stocks and 10.3% above stocks July 31, 1932.

The actual figures are as follows:

	Shipments	Production	Inventory
July, 1933...	5,497,191	5,713,626	6,844,006
June, 1933...	6,305,454	6,099,924	6,614,940
July, 1932...	2,404,095	3,616,829	6,202,856

RUBBER CONSUMPTION IN AUGUST DECLINES

Consumption of crude rubber by manufacturers in the United States for the month of August amounted to 44,939 long tons, which compares with 50,184 long tons for July this year, and represents a decrease of 10.5% under July but was 89.4% over August a year ago, according to statistics released by The Rubber Manufacturers Association. Consumption for August, 1932, was reported to be 23,721 long tons. Consumption for first eight months, 1933, amounted to 279,847 long tons as compared with 244,621 long tons for same period, 1932.

Imports of crude rubber for August were 44,802 long tons, an increase of 1.2% over July and 30.9% above August, 1932.

The association estimates total domestic stocks of crude rubber on hand August 31 at 325,418 long tons, which compares with July 31 stocks of 326,609 long tons. August stocks show practically no change as compared with July of this year, but were 5.1% below stocks of August 31, 1932.

The participants in the statistical compilation report 53,084 long tons of crude rubber afloat for the United States ports on August 31, compared with 57,435 long tons afloat on July 31 this year, and 42,846 long tons afloat on August 31, 1932.

August reclaimed rubber consumption is estimated to be 9,446 long tons, production 11,708 long tons, stocks on hand August 31, 15,037 long tons.

August Car Sales Down

August factory sales of automobiles manufactured in the United States (including foreign assemblies from parts made in the United States and reported as complete units or vehicles), based on data reported to the Bureau of the Census, consisted of 236,480 vehicles, of which 195,076 were passenger cars, 41,336 trucks, and 68 taxicabs, as compared with 233,088 vehicles in July, 90,325 vehicles in August, 1932, and 187,197 vehicles in August, 1931.

Pay Taxes In Advance

Three Akron rubber companies, Goodyear, Goodrich and Firestone, early this month paid $360,000 in personal tangible taxes in advance of their due date in November, in order that the County Treasurer might pay school teacers' salaries. The Board of Education appealed to the rubber companies for this advance payment on account of shortage of funds with which to pay salaries.

R.G.A. CONFERRING WITH DUTCH ON RESTRICTION

The Rubber Growers' Association of London has appointed a deputation to confer in Amsterdam with Dutch rubber interests regarding the provisions of a proposed restriction scheme under which both British and Dutch planters would cooperate.

Originally, it was intended to send four members of the R.G.A. to Holland, but the number has now been increased to six. This deputation is to report its findings to a committee of fourteen at the Rubber Growers' Association in London.

Dutch growers and native owners of plantations are seeking a scheme of control whereby their output may be restricted by 50 per cent. Latest reports from the Dutch East Indies are that the native planters are willing to cooperate on a reduced output basis. The problem remains, however, of how to enforce control on the entire native planting community—a problem which has for years successfully negatived every conceivable plan.

French Indo-China is expected to be in the new scheme upon a basis of a 25,000 tons annual output, but with a definite undertaking that no further planting is to be done. While the details are expected to be completed soon, the plan could not be enacted before next Spring.

The R. G. A. announces that the Rubber Regulation Committee appointed by the council consists of the following: W. J. Gallagher (chairman, R. G. A.), J. Fairbairn (vice-chairman, R. G. A.), F. D. Ascoli, N. C. S. Bosanquet, C. Figg, J. G. Hay, E. D. Hewan, G. H. Masefield, E. Macfadyen, H. Eric Miller, J. E. Milne, E. B. Skinner, Sir Frank Swettenham, Sir Herbert Wright.

The publication of the names indicates the widely representative nature of the committee. One of the most interesting of the inclusions is that of Mr. Ascoli, the managing director of Dunlop Plantations, in view of the fact that the Dunlop interests have hitherto strenuously opposed all restriction proposals.

Adds 1400 Workers

The Mishawaka Rubber & Woolen Mfg. Co., Mishawaka, Ind., manufacturer of rubber footwear, has added over 1400 employees since July 1 to meet increasing demand for their products and to cooperate with the NRA. The firm reports that due to action taken by the Government in raising the tariff on foreign-made rubber-soled canvas shoes, the importation of such shoes from abroad has fallen off to the point where it is practically negligible.

Master Tire to Recapitalize

Stockholders of the Master Tire & Rubber Corporation, operating the Falls Rubber Co., Cuyahoga Falls, Ohio, Cooper Corp., Findlay, Ohio, Giant Tire & Rubber Co., Findlay, Ohio and the Quaker City Rubber Co., Philadelphia, Pa., at a meeting held at the Falls plant on September 19 voted unanimously to increase the capital structure of the company and provide needed new working capital by the issuance of new stock. No details of the stock plan were revealed pending qualification by state and federal authorities.

President Bremmer stated the company had showed a profit during the past few months but had found it difficult to meet fixed charges and maintain sufficient operating capital. It is understood that all manufacturing operations of the company have temporarily been centered at the Giant plant in Findlay.

CONTROL OF INDIA TYRE MAY PASS TO DUNLOP

A plan has been proposed for reconstruction of the India Tyre & Rubber Co. (Great Britain), Ltd., which involves passing control of the company to Dunlop Rubber Co., Ltd., which thereby strengthens the latter's dominant position in the British tire industry. Directors of India Tyre state it is necessary to provide £350,000 in order to meet losses incurred.

It is proposed to write down the existing £625,000 of £1 preference shares to 12s and the 2,500,000 deferred 1s shares to 2.4d. In order to repay the loan of £250,000 from the Prudential Insurance Co., Dunlop have agreed to subscribe to 2,350,000 1s common shares at 2s each.

Litter In Larger Quarters

The D. H. Litter Co., Inc., manufacturers' sales agents for solvents, pigments and colors, have moved from 110 West 40th Street to 500 Fifth Avenue, New York City. Among the concerns which the Litter company represents are Anderson Prichard Oil Corp., and Pure Calcium Products Co.

Goodrich Sales Up 300%

A 300 per cent increase in sales of first line tires for the third quarter of this year against the corresponding period last year, was reported today by the B. F. Goodrich Company. President James D. Tew revealed the increase in sales in a statement on quarterly operations.

PRICE CUTTING WRECKS GERMAN TIRE AGREEMENT

Dissatisfaction with the existing trade agreement in the German automobile tire industry has resulted in its cancellation, according to advices from Consul Sydney B. Redecker, Frankfort-on-Main, to the Commerce Department, as reported by the *Journal of Commerce*. This agreement, established at the beginning of the current year between manufacturers and dealers to regulate the German trade in automotive tires, is generally admitted to have failed to achieve its purpose of satisfactory regution, the report states.

One cause of serious complaint is the reported excessively low prices granted directly by manufacturers to very large buyers, such as automobile manufacturers and concerns operating numbers of vehicles. Tire producers have been so eager to keep up production to the maximum that in order to secure these large contracts they have cut their prices to levels allowing scant profit above production costs.

On the other hand dealers are dissatisfied because of their small turnover and elimination from the important wholesale business. In spite of strict regulation, considerable price cutting has taken place among the dealer trade.

Wire Company to Resume Soon

The New York Insulated Wire Co., Wallingford, Conn., operated as a division of the Essex Wire Corp., Detroit, Mich., is preparing to resume full operation, according to Addison E. Holton, president of the Essex corporation. Braiding equipment, rubber mill and tubing facilities are being put in readiness for resumption of work, and new equipment will be installed. Ralph H. Mount is general manager of the plant, which has been shut down most of the time during the past several years.

FINANCIAL NEWS

Fisk Rubber

Statement of Fisk Rubber Corp. (successor to Fisk Rubber Co.) and subsidiaries for period from May 20 to June 30, 1933, shows net income of $191,279 after expenses, federal taxes and provision for capital stock tax. Sales for period totaled $1,335,788. Company issued a separate statement of export accounts in liquidations for the same period showing net profit, after expenses and including $4,999 profit on exchange of $24,686 transferred to reserve.

Tentative consolidated balance sheet as of June 30, 1933, shows current assets of $7,422,513 and current liabilities of $892,234. Cash on hand and in banks amounted to $866,089 and estimated cash receivable from reorganization committee was $1,700,000.

United Carbon

The United Carbon Co. is likely to report for the third quarter net profit approximating $178,000, according to present indications, states *The Wall Street Journal*. This would be equivalent to 40 cents a share on the 370,127 shares of no-par common stock after allowing for the quarterly dividend requirements on the 17,357 shares of 7% preferred. In the second quarter net was $171,760, or 38 cents a common share, and in the third quarter last year $34,039.

During the third quarter the company's sales of carbon black continued in record volume, and for the nine months exceeded the volume for the full year 1932, when the sales were 10% greater than in 1931. Natural gas deliveries currently are running at a record rate for this season of the year. In eastern Kentucky the company continued drilling operations in the third quarter, proving up additional gas reserves.

Firestone Dividend

Firestone Tire & Rubber Co. directors have declared the regular quarterly dividend of 10 cents per share on outstanding common stock payable Oct. 20 to stockholders of record Oct. 5.

Lee Rubber

Lee Rubber and Tire Corporation for quarter ended July 31, showed net profit after taxes, depreciation, interest and other charges of $221,090, equal to 84 cents a share on 262,200 $5 par capital shares, excluding 37,800 shares in treasury. For nine months ended July 31: Net profit, $25,931, or 9 cents a share.

GOODRICH EMPLOYEES RECEIVE 20-YEAR PIN

Eighteen employees of The B. F. Goodrich Company, Akron, Ohio, received their 20-year service pins in September.

The group month included Fred W. Clause, secretary to President J. D. Tew; Rexford O. John, manager of the corporate accounts department; Edward Buehler, scheduler in the mechanical goods division; Clarence Bennett, in charge of surplus footwear equipment; and Clarence Ohl and William Cochrane, in the paymaster's department.

Clause entered Goodrich in the truck tire sales department and after a year there was placed in charge of the stenographic branch of the utilities department, holding that post nine years. He then became associated with Dr. W. C. Geer, former vice-president in charge of research, and became Mr. Tew's secretary in May, 1926.

John started in the paymaster's office, went to branch administration, then to the branch auditing department, of which he was manager five years. He has been with the corporate accounts department ten years.

Buehler joined the departments making matting, inlaid flooring and sheeting and is now scheduler in these departments. Bennett started in the tire department and a year later was transferred to the footwear branch, where he has since remained.

Ohl joined the stock department, has also been in the credit department, and the payroll division of branch administration. He has been in his present department since 1918. Cochrane entered Goodrich service three months after arriving in the country from Scotland. Nearly all his service has been in the paymaster's office.

Others awarded the pins are: Austin Cowles, patternmaker; Claude D. Davis, plant protection department; Edward L. Downey, elevator operator; John H. Hannan, machinist; August Hetzel, pipefitter; Leo Kendall, tube department; Robert E. Little, shipping room; Jerome C. Lux, tire shipping clerk; David Stear, pressman; Frieda Wiese, office clerk in molded goods department; Coy Yerkey, shift foreman in the curing room and Paul Gerstenberger, tire salesman, Kansas City, Mo.

Canfield Plant Busy

The H. O. Canfield Co., manufacturer of plumbers' supplies and rubber specialties, Bridgeport, Conn., has experienced a marked increase in business during the past three months, an executive told THE RUBBER AGE. The company has been running day and night shifts and has added 170 employes since the N.R.A. provisions were put into effect. Prospects for the fall and winter are described as excellent.

Lee Tire Builds

The Lee Tire & Rubber Co., Conshohocken, Pa., has awarded a contract to the firm of Stofflet & Tillotson of Philadelphia for construction of a one-story brick and steel addition to its plant. The new unit, to be used for milling and compounding, will be 60 by 100 feet in size.

Names in the News

ANGEL MORENO, President and General Manager of Cia, Hulera Industrial Mexican S. A., Mexico City, has returned to Mexico after a six weeks stay in the United States where he investigated the latest developments in materials and equipment used in the rubber industry in New York, Cleveland and Akron. He purchased some new machinery and also hired an American chemist to help in developing a new line of products. For a number of years this progressive company manufactured tennis shoes exclusively but has since added raincoat materials, hospital sheeting, tubing, auto top material, matting, etc.

A. C. FULTON, development and designing engineer of Aetna Rubber Co., Ashtabula, Ohio, is running for office as a member of the City Council at the coming election.

W. H. URQUHART, former general superintendent of the Goodyear Australian factory, has been appointed as consulting engineer at the Akron plant to succeed the late W. C. State. Mr. Urquhart joined the Goodyear engineering department in 1905 in Akron. He was in charge of the California plant construction in 1920, where he remained until 1927 when he was sent to Australia to direct construction of the factory there, where he stayed as general superintendent.

DR. J. R. KATZ, professor of the University of Amsterdam, Holland, and originator of the X-ray method for studying the structure of rubber, addressed the Akron section of the American Chemical Society in the University Club, on September 17. Dr. Katz also attended the meeting of the Rubber Division in Chicago on September 11-14.

GEORGE E. PELL, well-known crude rubber man, has reengaged in business as a broker with offices at 95 Front St., New York City. Telephone Digby 4-8854.

R. M. MCFARLAND, chemist in the engineering division of the B. F. Goodrich Company, Akron, Ohio, has returned to his office after an absence of six weeks following an operation for appendicitis.

DR. J. C. HUNSAKER, vice-president of Goodyear-Zeppelin Corp., and distinguished aeronautical engineer, has accepted an appointment as head of the department of mechanical engineering of Massachusetts Institute of Technology. He succeeds the late Prof. Edward F. Miller, for many years head of the department.

H. W. DELZELL, manager of technical service of the B. F. Goodrich Co. tire division, has been appointed chairman of the newly formed committee on wheel equipment of the American Society of Agricultural Engineers. He has recently been making extensive studies on the use of tires for agricultural tractors.

O. D. HOLLENBECK, formerly of Akron, was recently appointed as Minnesota director of re-employment. For the past three years, Mr. Hollenbeck has been connected with the employment stabilization institute of the University of Minnesota. While in Akron he worked for many years as a division superintendent at the Firestone Tire and Rubber Co.

DR. GEORGE WEBER, assistant technical director of Continental Rubber Works, Hanover, Germany, accompanied by Karl Ebeling, Heinrich Schuster and Hans Karthaus, technicians, recently visited the Goodrich plant in Akron.

CLYDE L. SMITH, general superintendent of the Firestone Tire & Rubber Co., has left for the Firestone plant at Los Angeles, to take up duties there as factory manager of both the tire and battery divisions. Mr. Smith, who started work for Firestone in 1911, has been foreman, general foreman, production superintendent and plant manager of Plant 2 in Akron.

ROYAL E. DAVIS, manager of commercial research for the Goodyear Tire & Rubber Co., recently addressed the annual convention of the Ohio Society of Certified Public Accountants at Columbus Country Club, Columbus, Ohio.

HAROLD S. GODWIN, manager of the Singapore branch of the crude firm of Hecht, Levis & Kahn, Ltd., London, visited New York recently where he was a guest of the members of the Commodity Exchange, Inc. Mr. Godwin has been prominent in Singapore rubber circles for more than twenty years.

FACTORY FILM MADE BY PENNSYLVANIA RUBBER

The Pennsylvania Rubber Company has just completed a motion picture that shows the entire operation of their factory in Jeannette, Pennsylvania. The film shows the manufacture of tubes and tires, tennis balls, bicycle tires and play balls. Plans are under way to make it possible for tire dealers all over the country to see this picture and learn how Pennsylvania products are made.

On Tuesday, October 3, the Kiwanis Club of Jeannette was given the opportunity of a preview of this production. J. C. Rutherford, Advertising Manager of the Pennsylvania Rubber Company, displayed the picture and talked about interesting features in it. W. O. Rutherford, president and A. C. Bowers, vice president of the company were among those present.

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Obituaries

Frederik Engstrom

After an illness of several months, Frederik Engstrom, chief chemist and consulting engineer for the United Carbon Company, died at his home in Charleston, S. C., on October 6.

Mr. Engstrom was born in Persburg, Sweden, on April 30, 1862. At an early age he became interested in chemical engineering in which field he was destined to rise to a high place. His education was secured in the best schools of his native land. In 1883 he came to the United States and for five years was connected with the Wetmore Lumber Company of Ludlow, Pa. He later became general superintendent of the Peerless Carbon Company of Ludlow

Frederik Engstrom

and Kane. He now turned the latent talent and benefit of his foreign training to the furtherance of the carbon black industry.

In the meantime the petroleum industry in West Virginia was growing rapidly. In 1907 he left the Pennsylvania field and became associated with the Castle Brook Carbon Company, as superintendent of a large plant located at Smithburg. This connection was retained until a consolidation with another company was later consummated.

Mr. Engstrom in 1900, at Kane, Pa., had been joined by Oscar Nelson, a young man just from Sweden, who has also reserved for himself a high place in the carbon black industry. From that time the lives of these two leaders were much interwoven. In 1905, Mr. Nelson located at Weston, W. Va., and in 1914 the Columbian Carbon Company was organized. Mr. Nelson became general manager of his new company and the old company with which Mr. Engstrom was connected was absorbed in the combination formed. When the Kosmos Carbon Company desired to enter the new Kentucky field in 1924, Mr. Engstrom was selected to supervise the erection of the several new plants, returning the next year to West Virginia to join the United Carbon Company. This company was organized in February, 1925 by Mr. Nelson. It was brought about by a merger of fifteen companies and headquarters were established in Charleston. Modern research laboratories were erected in Charleston, and here until his recent illness, Mr. Engstrom continued his work in this field.

As is often the case, few knew of the achievements of this quiet, kindly, unassuming man. He devised improved machinery of far reaching importance and had much to do with the erection of modern carbon plants in Utah and Texas. Few men were so widely responsible for the development of the carbon black industry of this country. But it was in the field of petroleum chemistry that he made his greatest achievements. For to him, more than any other, is due the credit for the development of the blacks that marked a new period in the art of printing. The same may be said of certain phases of the rubber industry.

On December 24, 1888, Mr. Engstrom married Miss Mary E. Parker of Tidioute, Pa. To this union were born eight children. Besides his widow, he is survived by Harold Engstrom, manager of the United Carbon Company at Monroe, La.; Mrs. Oscar Nelson, wife of the president of the company; Mrs. Clara Shinn, of Borger, Texas; Mrs. Sara Barnes, of Smithburg; Mrs. Naomi Coyne of Salem; Mrs. Stitt of Mannington; Mrs. Dorothy Emmert, of Wilmington, Ohio; and Miss Helen Engstrom of Charleston. Two brothers, Victor Engstrom of Brookfield, Illinois, and Charles Engstrom of Ware, Iowa, also survive.

Mr. Engstrom at the time of his death was President of the Natural Gas Products Company of Charleston. He was a member of the Scottish Rite Masons and the Shrine, and served for several years as Master of the Lodge at West Union. He was also a member of the Woodmen of the World and the Odd Fellows and affiliated with the Lutheran Church.

Interment was at Sunset Memorial Park. The active pallbearers were: Henry Capito, Dr. E. C. Stanton, Kenneth Porter, H. B. McJunkin, Herman Carte, A. G. Treadgold, R. V. Sleeth, and R. B. Payne.

James P. Millwood

James P. Millwood, chief chemist of the Okonite Co., Passaic, N. J., died on September 24 after a year's illness. Mr. Millwood, who was 66 years old, was born in Queenstown, Ireland, on July 4, 1869. He attended private school, then St. Calman's College, Fermoy, from 1881 to 1886. In the latter year he began a five-year association with W. & H. M. Goulding, Ltd., manufacturing chemists of Cork. He passed in 1887 the Irish Pharmaceutical Society examinations and later attended Queen's College, Cork, for two years, under Maxwell Simpson, best known for his synthesis of succinic acid. In 1890 he received his degree as a pharmaceutical chemist.

In March of the following year Mr. Millwood came to the United States and four years later, with his brother, since deceased, he founded the Pulvolco Chemical Company, manufacturing bleaching and fabric waterproofing preparations.

In 1896 he went with the United States Naval Laboratory and in 1901 won a Civil Service appointment as chief chemist of the Brooklyn Navy Yard. Since then he was consulted by many railroad officials, State and municipal officials on the purchase and inspection of rubber articles and insulated wire.

In 1915 he was appointed chief chemist of the Okonite Company, manufacturers of insulated wires and cables and electrical accessories. Mr. Millwood was active in the Rubber Division, A.C.S., and in the A.S.T.M. He instigated many improvements in insulated wires and in manufacturing and was instrumental in inaugurating specifications in the purchase of rubber goods while in the U. S. Navy Yard.

Mr. Millwood was a member of the American Institute of Chemical Engineers, American Society for Testing Materials, American Chemical Society, Passaic Rotary Club, Holy Name Society and Knights of Columbus.

Mr. Millwood is survived by his wife, the former Elizabeth Wickham, and three children: Elsie, Daniel and Anna.

Robert S. Westcott

Robert S. Westcott, treasurer of the Metal Hose and Tubing Company, Inc., Brooklyn, N. Y., died of heart disease on September 26 after a week's illness. A native of New York City, Mr. Westcott had been treasurer of the company, which manufactures gasoline and oil hose, for about fifteen years.

Before his connection with the hose manufacturing concern, Mr. Westcott was advertising manager for the Bosch Magneto Company. Previous to that he had been a salesman for the American Book Company.

Mr. Westcott is survived by his widow, the former Miss Margaret Kennedy; by two brothers, Harry O. Westcott of White Plains, N. Y., and Herbert H. Westcott of New York, and a sister, Mrs. Howard Thorne of New York.

I. E. Reed

I. Ely Reed, treasurer of the Mercer Rubber Company, Hamilton Square, N. J., and vice president of the New Jersey Rubber Manufacturers' Association, died suddenly September 28 from a heart attack. He was 65 years old. Mr. Reed was stricken in his office and removed to his home, where he died a short time later. Mr. Reed was active in civic and business circles of Hamilton Square and Trenton. He was president of the First National Bank of Hamilton Square and president of the Sinking Fund Commission of Hamilton Township. He was also general manager of the Hamilton Square Water Company and long an active member of the First Presbyterian Church of Hamilton Square. His fraternal affiliations included membership in the Masonic Fraternity, Ancient Accepted Scottish Rite of Free Masonry; Crescent Temple; Junior Order United Mechanics and Odd Fellows.

Mr. Reed was born near Freehold and had resided in Hamilton Square for the past 48 years. He is survived by his widow, Ida W. Reed, a daughter and two sons, two brothers and three sisters. Burial was in Greenwood Cemetery, Trenton.

F. L. Rapson

The death has just occurred at Eastbourne, England, of Frederick Lionel Rapson, the famous automobile racer and inventor of the Rapson tire. Mr. Rapson's death was sudden, and is said to have been connected with a war wound on the back of the head. Mr. Rapson was 43 years old. He is survived by his widow and son.

T. E. Pope

Thomas E. Pope, tire foreman for the Hamilton Rubber Co., died recently at his home in Trenton after a lengthy illness. He was 48 years old and was formerly employed in a rubber plant at Conshohocken, Pa. He is survived by his widow, two sons and two daughters. Burial was at Conshohocken.

New Rubber Goods

Detachable All-Rubber Valve

The Wilson-Western Sporting Goods Co., Chicago, has brought out what is said to be the only rubber valve bladder that is detachable and replaceable. It is leakproof, dust-proof and fool-proof. The valve seat is securely sewed to the casing at the factory. It is not cemented or pasted to the casing and will not come loose. The rubber valve bladder is screwed into the anchorage in the casing in the same manner as the metal screw-type valve, assuring an even contour on the surface of the ball without any bulging. There is no chance for misalignment of bladder with the casing. The inflation needle which is equipped with the Schrader valve passes between the expansion plug and the channel wall of the valve. All danger of puncture is removed. The expansion plug made of a special elastic long wearing rubber closes and seals the channel eliminating the use of a dust cap.

Tear Proof Tube

A new type tear-proof tube designed for low pressure balloon tires has been developed by The B. F. Goodrich Company, Akron, Ohio. Two different stocks are used in the new product, the inside periphery of the tube being manufactured to reduce abrasive action caused by rims and the outside to resist tears even in case of flat tires. Another feature of the tube is the valve assembly which may be inserted through the hole in the rim and the tire mounted without removing any part of the valve.

The rim nut is eliminated and in case of a flat tire the valve pulls into the rim well and prevents the unit from being torn from the tube. The tube will turn with the tire until the car is stopped.

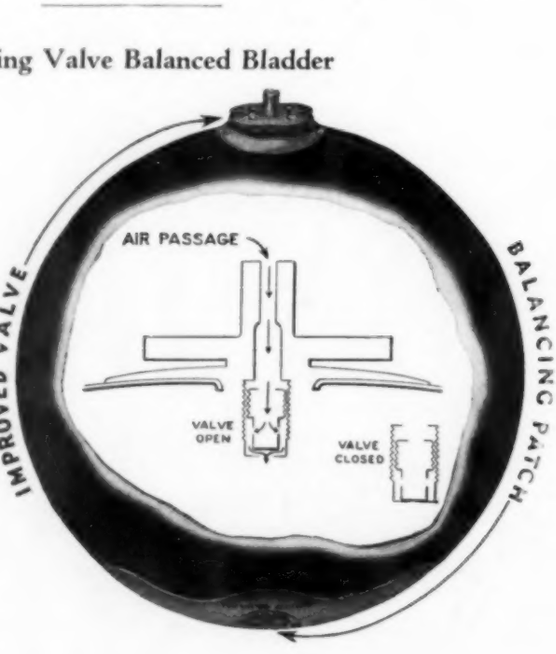
New Schrader Displays

The novel display cartons, illustrated, are now being introduced to the trade by A. Schrader's Son, Inc., Brooklyn, N. Y. They are brightly colored and ingeniously designed to hold minimum standard stocks of Schrader valve cores and caps. A special finish adds to their brilliance and durability. They may be set up with or without the easel back as a counter or window display piece. In addition to their neat appearance, they help in keeping a closer check on stock.

Spalding Valve Balanced Bladder

A basketball bladder, with an improved rubber valve, has just been announced by A. G. Spalding & Bros., Chicopee, Mass. This valve is a combination of metal and rubber designed to eliminate the objections of the metal type valve and at the same time retaining all of the better features of a rubber valve. It is said to be leakproof, punctureproof and foolproof.

The valve is provided with a small metal barrel which is securely molded in a rubber stem. The inflating needle upon being inserted in the valve and turned to the left for one full turn, opens the valve for inflation; a full turn to the right after inflation and the valve is securely closed and locked.



BOSTON RUBBER GROUP TO MEET NOVEMBER 3

Two interesting papers are scheduled for the Fall meeting of the Boston Rubber Group to be held at 6:30 P. M., Friday November 3 at the University Club, Boston. R. P. Dinsmore of Goodyear Tire & Rubber Co. will talk on "Problems and Opportunities of the Rubber Technologist" and R. B. Ladoo, formerly of the U. S. Bureau of Mines, will discuss, "The Search for Rubber Fillers." A dinner will precede the presentation of papers. Tickets are $1.75 each and reservations may be sent to the Secretary-Treasurer, J. J. Sindler, Converse Rubber Co., Malden, Mass.

Federal Receiver for India Denied

Action on the receivership of the India Tire & Rubber Co., was referred back to Harry L. Snyder, special master at Akron for possible adjudication in bankruptcy, by Federal Judge Paul Jones of Cleveland on September 15.

He denied the motion of attorneys representing a group of English bond holders for the appointment of a federal receiver and refused acceptance of a bid of $600,000 by a creditors' committee headed by W. G. Klauss, former India head, for the assets of the company, pointing out that they were once appraised at $1,016,000.

"If this business is worth saving," Judge Jones states, "and if it has a reasonable prospect of being profitably operated, the creditors should make every serious effort presently to effect a reorganization or to compose their views in respect to an advantageous sale or other disposition of the property."

New Rubber Thread Company

Production is scheduled to start late this month at the plant of a new company, the Life-Tex Corporation at Bedford, Ohio. The firm plans on manufacturing latex thread products, according to reports. I. D. Shade is vice-president and general manager of the company.

Mason Plant to Become Brewery

The plan of the Mason Tire & Rubber Company at Bedford, Ohio, has been purchased by the Wenso Company of Cleveland who plan to convert the factory into a brewery.

Makes Funeral Supplies

A new company to make rubber aprons, coffin covers and other funeral supplies has begun operating in Willoughby, Ohio. The concern is the Windemere Products Company, Ernest H. Philpott, President. Only a wholesale business will be carried on, for all the rubber supplies are purchased from rubber factories. The company was formerly located at Windemere, Ohio.

Rubber Workers Organize

Employees of the Pennsylvania Rubber Co. at Jeannette, Pa., have organized under the American Federation of Labor. Edward Croghan, official labor organizer, of New Kensington, stressed the importance of unionization at a largely attended meeting held on September 19.

TRENTON NEWS

The New Jersey Supreme Court has refused to stay a suit brought by Israel H. Albert, of Trenton, against the Ford Motor Co. of Detroit, for damages of $50,000. The court contended that sufficient evidence existed to warrant the case going to hearing. The action involves a contract in which the Ford Co. agreed to sell certain machinery to Albert. The company claims the contract was abrogated by mutual agreement and further claimed that the agreement had to do with the same machinery which formed the basis of a prior suit in which Albert recovered a $30,000 judgment. Both contentions are denied by Albert. Justice Perskie, who wrote the Supreme Court opinion, pointed out that counsel for the defendant admitted that some of the machines were not the same as those involved in the other litigation.

At the suggestion of Federal Judge Philip Forman, the Murray Rubber Co. has paid to the City of Trenton $31,161.41 in back taxes. The total delinquency of the Murray concern was $87,067.61. Judge Forman said he would limit the present payment to the $31,000 figure in order not to strip the company of funds and force it into further difficulties that might affect the operation of the plant.

William J. B. Stokes, president of the Joseph Stokes Rubber Co., recently celebrated his 76th birthday anniversary by giving a family dinner at his home.

General C. Edward Murray, president of the Crescent Insulated Wire & Cable Co., is chairman of a campaign committee for the City of Trenton to collect $3,000,000 in back taxes.

An order for an allowance of $10,000 for counsel for Harold S. Maddock, receiver of the Essex Rubber Co., and the Vulcan Recovery Co., of Trenton, has been signed by Federal Judge Philip Forman. Arthur E. Moon, treasurer of the Essex concern, and trustee with others representing 80 per cent. of the firm's capital stock, contested the claim of counsel. He contended that time for such action was not appropriate. The law firm claimed it had interviewed about 300 creditors of the Essex Company and also taken care of other legal matters. Hearing on an order to show cause why a monthly drawing account should not be allowed the receiver will be held later by Judge Forman. Receiver Maddock stated that he had been granted the sum of $2,000 a month and that the business has been showing a good profit.

Flames recently damaged a heater in the drying room of the plant of the Pocono Rubber Cloth Co. The blaze did not interfere with the operation of the plant.

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REVIEW SHELF

• Monthly Review of New Books, Pamphlets, Company Catalogs, Service Bulletins, House Organs, etc., Pertinent to the Industry.

THE BLACK ART OF RUBBER COMPOUNDING. Chat No. 23. Micronex Summary for 1933. 8 pp. and cover. Binney & Smith, New York City.

The booklet covers briefly the technical history of standard Micronex and also discusses the quality of the old stocks of carbon black on hand. It also describes briefly present-day application of Micronex, Micronex W-5 for wire insulation, Dustless Micronex and Fumonex.

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ZINC OXIDE IN RUBBER. New Jersey Zinc Co., New York City. 32 pp. booklet, 7½ x 10½.

The booklet consists largely of 23 charts which have appeared in this producer's advertising, preceded by a brief history of the use of zinc oxide in rubber and the part New Jersey Zinc Company played in this development. The charts illustrate rate of cure tests of various experimental compounds designed to emphasize differences between "fast" and "slow" curing zinc oxides.

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RUBBER AND AUTOMOBILES. By Colin Macbeth, with foreword by F. W. Lanchester. Issued by The Rubber Growers' Association, Inc., London, England. Loose leaf paper cover book. 112 pp. May, 1933.

This book is intended primarily for all those interested in the manufacture, supply and use of rubber for automobiles, and contains the following separate sections which are bound together in a loose leaf cover to facilitate the inclusion of additional matter: Tyre Development, Rubber in Suspension Systems; Rubber Chassis Parts Attached to Frame; Rubber in Power Plant: Rubber in Transmision Systems; Rubber in Braking Systems; Rubber in Steering Systems; Rubber in Coachwork; Body Constructions and Seatings; Rubber in Electrical Systems; Rubber Latex; Rubber Specifications and Standards.

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RUBBER IN CHEMICAL ENGINEERING, by Henry P. Stevens and M. B. Donald. Issued by the Rubber Growers' Association, Inc., London, England. Paper cover booklet. 55 p.

This book describes the present position of rubber as applied to the chemical and allied industries and should be of help to engineers in general and chemical engineers in particular in gaining a better knowledge of the field in which rubber has already been applied. The book is fully illustrated and indexed and contains chapters devoted to the properties and chemical resistance of rubber, rubber linings for tanks and the like, rubber paints, cements, etc., and the chemical uses of rubber.

LABOR PRODUCTIVITY IN THE AUTOMOBILE TIRE INDUSTRY, by Boris Stern. Bulletin 585 of the U. S. Bureau of Labor Statistics. July 1933. Paper cover booklet. 73 pp. For sale by the Superintendent of Documents, Washington, D. C. Price 10c.

This booklet contains 7 chapters in which the following are analyzed: Labor Productivity in Manufacturing Automobile Tires; Technological Displacement of Labor in the Tire Industry; Rates of Wages and Earnings of Workers in the Tire Industry; Preparation of Crude Rubber; Stock Preparation and Carcass Building; Curing, Finishing, and Inspecting Tires; Manufacture of Inner Tubes. Included, also, are a number of illustrations and charts.

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THE HISTORY AND DESCRIPTION OF CLONES OF HEVEA BRASILIENSIS, by C. E. T. Mann and C. C. T. Sharp. Illustrated by H. C. Chuan. Published by the Rubber Research Institute of Malaya. August, 1933. Planting Manual No. 5. Price $2.00.

The scope of this manual is to present in concise form the more important characters together with records of yield performance of the various Clones of Hevea brasiliensis that have been established and used in commercial plantings during recent years.

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ANNUAL REPORT 1932. Published by the Rubber Research Institute of Malaya, August 1933. Paper cover booklet. 148 pp. Price $1.00.

The contents of this booklet, including a number of tables, are as follows: Annual Report of the Board; Annual Accounts for the year 1932; Annual Report of the Director; Annual Report of the Soils Division; Annual Report of the Botanical Division; Annual Report of the Pathological Division; Annual Report of the Chemical Division; Annual Report of the Rubber Roadways Investigations; Annual Report of the Librarian; Annual Report of the Experiment Station; Annual Report of the Field Division; Annual Report of the London Advisory Committee for Rubber Research (Ceylon and Malaya).

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FARREL GEARFLEX COUPLINGS, Bulletin No. 437, Farrel-Birmingham Company, Inc., 437 Vulcan St., Buffalo, N. Y. 8½ x 11 in. Free on application.

The bulletin fits standard binders and files, and is done in two colors, with numerous illustrations, diagrams and tables of ratings, dimensions, weights and list prices, as well as complete descriptive matter and information for ordering or inquiring for "Gearflex" Couplings.

MARKETS

RUBBER—COTTON AND FABRICS—CHEMICALS

NEW YORK, OCTOBER 9, 1933

Crude Rubber

FLUCTUATIONS in rubber on the Exchange have been narrow and trading has been limited during the past month. A high of 8.38 for spot was reached on September 30 but the price dropped to 8.00 on the next trading day and today it was down to 7.88. Low for the past month was 6.88 on both September 12 and 13. On the outside market the average price was 7.30 for September compared to 7.31 for August. Today's quotation for ribbed smoked sheets was 7 15/16 compared to 6⅞ on September 12. Talk of the possibilities of restriction negotiations abroad has kept trading unsettled although it has not affected the market as violently as when restriction was first broached. The trade appears to be tired of waiting for restriction. Outside interest has been lacking lately as tire plants continued to curtail operation. Quotations on the outside market, Commodity Exchange, London and Singapore, follow:

Plantations—

Ribbed Smoked Sheets—			
Spot	—	@	.07⅞
October	—	@	.07⅞
December	—	@	.08⅛
First Latex, crepe spot	—	@	.08⅞
Amber Crepe, No. 2	—	@	.05¾
Amber Crepe, No. 3	—	@	.05⅝
Amber Crepe, No. 4	—	@	.05½
Brown Crepe, clean thin	—	@	.05¾
Brown Crepe, rolled	—	@	.04¾

Latex—

Liquid Latex, per gal.	.51	@	—

Paras—

Up River, fine	.09¼	@	—
Acre Bolivian, fine	.09½	@	—
Caucho Ball, Upper	.08½	@	—

Balata—

Block, Ciudad	—	@	.25

LONDON MARKET

Standard Smoked Sheets—Buyers—Oct. 9

October	—	@	3 11/16d
Jan.-Mar.	—	@	4 1/16d

SINGAPORE MARKET

Standard Smoked Sheets—Sellers—Oct. 9

October	—	@	3 11/16d
Jan.-Mar.	—	@	3 13/16d

Reclaimed Rubber

Reclaimers report a steady demand although September was off somewhat from July and August. Footwear and mechanical rubber goods plants have not lessened their requirements as much as tire plants but a spurt in tires is expected this month and in November. Scrap supplies appear to be ample but dealers tend to hold off for higher prices. Current quotations follow:

High Tensile

High Tensile Red	lb.	.06½	@	.06¾
Super-Reclaim Black	lb.	.07	@	.07½

Shoe

Washed	lb.	.08	@	.09
Unwashed	lb.	.06½	@	.06¾

Tube

No. 1 (Floating)	lb.	.11	@	.11½
No. 2 (Compounded)	lb.	.06¼	@	.06½

Tires

Black	lb.	.04¾	@	.05
Black, selected tires	lb.	.05	@	.05¼
Dark Gray	lb.	.05¾	@	.06
Light Gray	lb.	.07	@	.07½
White	lb.	.07½	@	.07¾
Truck, Heavy Gravity	lb.	.05¾	@	.06
Truck, Light Gravity	lb.	.06	@	.06¼

Miscellaneous

Mechanical blends	lb.	.04	@	.04¼

Scrap Rubber

The market for scrap has been steady in the past few weeks with demand from reclaimers only slightly off from August. Collections have been below the average with dealers holding their surplus stocks for a rise. There have been several slight price changes, current quotations being as follows:

(Prices to Consumers)

Auto tire peelings	ton	19.00	@20.00
Mixed auto	ton	11.50	@13.00
Clean solid truck tires	ton	30.00	@32.00
Boots and shoes	ton	25.00	@27.00
Arctics, untrimmed	ton	18.00	@20.00
Inner tubes, No. 1	lb.	.05	@ .05¼
Inner tubes, No. 2	lb.	.02½	@ .02¾
Inner tubes, Red	lb.	.02¾	@ .02⅞

Cotton

Since our last report a month ago when spot cotton in New York closed at 8.88, quotations have risen as high as 10.45 on the 19th but have receded to 9.65 today. September average was 9.64 compared with 9.55 for August. The Department of Agriculture announced today its forecast of cotton production for this year, the figure being 12,885,000 bales compared with 12,414,000 bales indicated a month ago and 13,002,000 bales produced last year. World's consumption of all kinds of cotton during August totaled 2,179,000 bales, compared with 2,104,000 bales in July and 1,819,000 bales in August, last year. The consumption was the largest for an August since 1927. Business has been sluggish recently in the cotton contract market due to unsettled conditions. Prices on the New York Cotton Exchange for Middling Upland on October 9 follow:

	Sept. 11	October 9		
	Close	High	Low	Close
October	8.88	9.52	9.20	9.42
December	9.09	9.69	9.28	9.55
May	9.50	10.09	9.68	9.96

Tire Fabrics

(Prices Net at the Mill—Process Tax Included)

Peeler, carded, 23/4/3	lb.	.43½	@ —
Peeler, carded, 23/5/3	lb.	.44½	@ —
Peeler, carded, 13/3/3	lb.	.41½	@ —
Peeler, carded, 15/3/3	lb.	.42½	@ —
Egyptian, carded, 23/5/3	lb.	.53	@ —
Egyptian, combed, 23/5/3	lb.	.58	@ —
CHAFERS			
Carded, American, 1 1/16"	lb.	.41	@ .42
Carded, American, 1"	lb.	.34	@ —
LENO BREAKER			
Carded, American, 1 1/16"	lb.	.41	@ .42
Carded, American, 1"	lb.	.35	@ —

Sheetings

40 inch, 2.50 yard	yd.	.11	@ —
40 inch, 2.85 yard	yd.	.09¼	@ —
40 inch, 3.15 yard	yd.	.10¾	@ —
40 inch, 3.60 yard	yd.	.09⅝	@ —
40 inch, 3.75 yard	yd.	.08⅛	@ —
40 inch, 4.25 yard	yd.	.07⅜	@ —

Ducks

Enameling	lb.	.32	@	.33
Belting and Hose	lb.	.30	@	—
Single filling, A grade	lb.	.16	@	.16½
Double filling	lb.	.17	@	.17½

Closing Rubber Prices on New York Commodity Exchange, Inc.

No. 1 Standard Contract of 10 Tons

FROM SEPTEMBER 12 TO OCTOBER 9

Date	Spot	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Sales
Sept. 12	6.88	6.80	6.92	7.04	7.16	7.32	7.43	7.54	7.64	7.75	7.87	8.00	8.12	——	461
13	6.88	6.92	7.04	7.16	7.27	7.45	7.55	7.65	7.76	7.88	8.00	8.12	8.24	——	180
14	7.13	7.10	7.22	7.33	7.45	7.58	7.71	7.84	7.96	8.08	8.20	8.32	8.44	——	380
15	7.07	7.05	7.17	7.29	7.40	7.57	7.69	7.81	7.92	8.04	8.16	8.28	8.40	——	283
16	7.19	7.30	7.42	7.52	7.63	7.78	7.91	8.04	8.18	8.32	8.41	8.57	8.60	——	133
17	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
18	7.50	7.57	7.63	7.77	7.92	8.09	8.24	8.41	8.54	8.69	8.82	8.96	9.10	——	610
19	7.75	7.88	8.00	8.11	8.23	8.43	8.53	8.63	8.76	8.90	9.04	9.18	9.32	——	761
20	7.75	7.65	7.74	7.82	7.95	8.08	8.21	8.40	8.54	8.76	8.85	9.01	9.15	——	836
21	7.25	7.26	7.36	7.46	7.56	7.76	7.87	7.99	8.10	8.22	8.36	8.50	8.64	——	544
22	7.38	7.48	7.56	7.66	7.77	7.92	8.08	8.25	8.37	8.50	8.60	8.70	8.84	——	426
23	7.38	7.95	8.00	8.10	8.20	8.38	8.53	8.68	8.81	8.96	9.03	9.10	9.24	——	184
24	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
25	7.70	7.80	7.80	7.92	8.05	8.21	8.37	8.53	8.64	8.75	8.85	8.95	9.09	——	306
26	7.50	7.60	7.60	7.75	7.91	8.08	8.22	8.37	8.48	8.60	8.70	8.80	8.90	——	187
27	7.62	7.63	7.63	7.78	7.93	8.07	8.21	8.35	8.45	8.57	8.67	8.77	8.87	——	236
28	7.58	7.63	7.63	7.75	7.88	8.03	8.18	8.33	8.45	8.58	8.70	8.82	8.94	——	153
29	7.90	——	8.00	8.13	8.28	8.42	8.57	8.74	8.83	8.99	9.05	9.15	9.27	——	663
30	8.38	——	8.45	8.57	8.70	8.85	9.01	9.18	9.36	9.55	9.67	9.79	9.91	——	475
Oct. 1	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
2	8.00	——	7.92	8.06	8.20	8.35	8.49	8.64	8.74	8.85	8.97	9.11	9.23	9.35	603
3	7.63	——	7.68	7.81	7.95	8.10	8.25	8.40	8.51	8.63	8.74	8.86	8.98	9.10	435
4	8.13	——	8.05	8.20	8.37	8.50	8.66	8.83	8.95	9.09	9.21	9.34	9.46	9.58	402
5	7.87	——	7.80	7.95	8.10	8.25	8.40	8.55	8.66	8.78	8.90	9.03	9.15	9.27	295
6	8.00	——	7.93	8.07	8.21	8.36	8.51	8.66	8.77	8.88	8.98	9.08	9.20	9.32	327
7	7.90	——	7.80	7.93	8.09	8.22	8.36	8.53	8.63	8.75	8.86	8.98	9.10	9.22	111
8	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
9	7.88	——	7.90	7.98	8.06	8.21	8.36	8.52	8.64	8.76	8.87	8.98	9.10	9.20	205

Rubber CHEMICAL Markets

NEW YORK, October 10, 1933

ACCELERATORS

Organic			
A-1	lb.	.24 @	.27
A-5-10	lb.	.33 @	.36
A-7	lb.	.55 @	.59
A-11	lb.	.62 @	.66
A-16	lb.	.57 @	.61
A-19	lb.	.58 @	.62
A-32	lb.	.80 @	.95
Aldehyde ammonia, crystals	lb.	.65 @	.67
Altax	lb.		
Captax	lb.		
Cryiene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.42 @	.43
Diphenylguanidine	lb.	.33 @	.34
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde aniline	lb.	.37½@	.42
Guantal	lb.	.42 @	.51
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.37 @	—
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.36 @	.37
Monex	lb.	3.25 @	—
Oxynone	lb.	.68 @	.80
Phenex	lb.	.50 @	.55
Pipsol X	lb.	3.55 @	4.00
R & H 40	lb.	.40 @	.41
R & H 50	lb.	.40 @	.41
R-2	lb.	1.95 @	2.15
R-2 Base	lb.	4.55 @	5.00
Safex	lb.	1.20 @	1.25
SPDX	lb.	.75 @	—
Super-Sulphur No. 1	lb.		
No. 2	lb.		
Thiocarbanilid, drums	lb.	.25 @	.27
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.60
Tuads	lb.		
Ureka	lb.	.75 @	1.00
Ureka C	lb.	.58 @	.69
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Z-88-P	lb.	.50 @	.60
Zimate	lb.		
Inorganic			
Litharge, domestic	lb.	.05¾@	—
Magnesia, calcined, light	per 100 lb.	3.35 @	3.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)

Blues			
Prussian	lb.	.36 @	.37
Ultramarine	lb.	.06 @	.30
Browns			
Sienna, Italian	lb.	.04 @	.08
Umber, Turkey	lb.	.04 @	.06
Greens			
Chrome, light	lb.	.23 @	.26
medium	lb.	.26 @	.28
dark	lb.	.28 @	.33
Chromium Oxide, bbl.	lb.	.23 @	.27
Reds			
Antimony crimson, 15/7	lb.	.40 @	—
sulfur, free	lb.	.52 @	.56
Indian English	lb.	.09 @	.10
Domestic (Maroon)	lb.	.11 @	—
Red oxide, pure	lb.	.10 @	.12
Rub-Er-Red, f.o.b. Easton	lb.	.08¾@	—
Whites			
Cryptone CB, No. 21	lb.	.06½@	.06¾
Cryptone, No. 19	lb.	.06½@	.06¾
Lithopone, Albalith	lb.	.04½@	.04¾
Lithopone, Azolith	lb.	.04½@	.04¾
Titanium oxide	lb.	.17 @	.19
Titanox B	lb.	.06 @	.06½
Titanox C	lb.	.06 @	.06½
XX Zinc Sulphide, bbls.	lb.	— @	.13
Zinc Oxide—American Process			
American Azo: ZZZ (lead free)	lb.	.05¾@	.06
ZZ (leaded)	lb.	.05½@	.05¾
Horsehead Lead Free Brand: Selected	lb.	.05¾@	.06
Special	lb.	.05¾@	.06
XX Red	lb.	.05¾@	.06
XX	lb.	.05¾@	.06
XX Green	lb.	.05¾@	.06
Leaded Brand, Standard	lb.	.05½@	.05¾
Sterling	lb.	.05½@	.05¾
Superior	lb.	.05½@	.05¾
Lehigh	lb.	.05¼@	.05½
U. S. P., bbls.	lb.	— @	.12¾
Kadox, black label	lb.	.09⅝@	.09⅞
Blue label	lb.	.08⅝@	.08⅞
Red label	lb.	.07¼@	.07½
St. Joe, black label	lb.	.05¾@	.06
green label	lb.	.05¾@	.06
red label	lb.	.05¾@	.06
Zinc Oxide—French Process			
Anaconda, lead free	lb.	.05¾@	.06
Anaconda, selected lead free	lb.	.06¼@	.06½
Florence White seal, bbls.	lb.	— @	.10⅞
Green seal	lb.	.09⅝@	.09⅞
Red seal	lb.	.08⅝@	.08⅞
Yellows			
Chrome	lb.	.16 @	.16½
Ocher, dom. med.	lb.	.01½@	.02

BLACKS

Arrow "Aerfloted" c.l. f.o.b. works, bags	lb.	.02¾@	—
c.l. f.o.b. works, cases	lb.	.04¼@	—
less c.l. f.o.b. works	lb.	.05¼@	.07
Arrow "Aerfloted" Specification, c.l. f.o.b. wks., bags	lb.	.03 @	—
Bone, powdered	lb.	.05½@	.12½
Carbon, compressed	lb.	.02¾@	.07
uncompressed	lb.	.02¾@	.07
"Certified," Cabot c.l. f.o.b. works, bags	lb.	.02¾@	—
c.l. f.o.b. works, cases	lb.	.04¼@	—
less c.l. f.o.b. works	lb.	.05¼@	.07
Spherons	lb.	.02¾@	—
"Disperso" f.o.b. La.	lb.	.028 @	.071
f.o.b. Texas	lb.	.02¾@	.07
Drop, bbls.	lb.	.05½@	.14
"Excello," compressed	lb.	.03 @	—
"Fumonex"	lb.	.03 @	.07
"Gastex"	lb.	.03 @	.07
Lampblack	lb.	.06 @	.08
"Micronex" c.l. f.o.b. works, bags	lb.	.03 @	—
c.l. f.o.b. works, cases	lb.	.04½@	—
less c.l. f.o.b. works	lb.	.05½@	.07
"Supreme"	lb.	.02¾@	—
Thermatomic—"P 33"	lb.	—	—
"Thermax"	lb.	—	—
United, "Dixie" and "Kosmos" c.l. f.o.b. works, bags	lb.	.02¾@	—
c.l. f.o.b. works, cases	lb.	.04¼@	—
less c.l. f.o.b. works	lb.	.05¼@	.07
"Velvetex"	lb.	.02½@	.05

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate, lump	lb.	.10½@	.12
Asbestine	ton	15.00 @	—
Barium carbonate (98-100%)	lb.	.05 @	—
Barium Dust	lb.	.05 @	.06
Barytes southern off-color	ton	10.00 @	18.00
Western prime white	ton	23.00 @	—
Basofor	lb.	.04½@	—
Bentonite	lb.	.02 @	.03
Blanc fixe dry f.o.b. works	ton	60.00 @	65.00
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk, precipitated Suprex white, extra lt.	ton	60.00 @	75.00
heavy	ton	45.00 @	55.00
Clay, Kaolin, domestic	ton	6.00 @	7.00
Aerfloted, Suprex	ton	6.50 @	8.00
Congaree	ton	9.00 @	—
Dark Blue Ridge	ton		
Dixie	ton		
Langford	ton		
Lexington	ton	10.00 @	22.00
Par	ton		
Tensulite		15.00 @	—
Cotton Flock	lb.	.08 @	.16
Glues, extra white	lb.	.15 @	.22
medium white	lb.	.12 @	.14
Kalite No. 1	ton	30.00 @	55.00
Kalite No. 3	ton	40.00 @	65.00
Magnesia, carbonate	lb.	.05¾@	.06
Mica	lb.	.04 @	—
Rottonstone (powdered)	ton	23.50 @	28.00
Soapstone, powdered	ton	16.00 @	18.00
Starch, powdered	cwt.	2.50 @	2.60
Talc, domestic	ton	12.00 @	15.00
Pyrax A	ton		
Whiting, commercial	cwt.	.85 @	1.10
English cliffstone	cwt.	1.50 @	1.70
Sussex	ton		
Witco	ton	20.00 @	—
Zinc Carbonate	lb.	.10½@	—
Zinc Stearate	lb	.20½@	.21

MINERAL RUBBER

Genasco (factory)	ton	30.00 @	43.00
Granulated M. R.	ton		
Hard Hydrocarbon	ton		
Parmr, solid	ton	23.00 @	28.00
Pioneer, MR, aclid	ton	40.00 @	42.00
Pioneer-granulated	ton	50.00 @	52.00

SOFTENERS

Acids Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulfuric, 66 degrees	cwt.	1.55 @	1.80
Tartaric, crystals	lb.	.23½@	—
Acids, Fatty Laurex	lb.	.15 @	.16
Stearex	lb.	.08 @	.12
Stearic, double pressed	lb.	.08 @	.12
Alkalies Caustic Soda, 76%	cwt.	2.55 @	—
Soda Ash, 58% C.L.	cwt.	1.20 @	1.35
Oils Corn, refined, bbls.	lb.	— @	.06¾
Cottonseed, crude	gal.	— @	.04
Cycline Oil	gal.	.15 @	.28
Degras (c.l. 100 bbls.)	lb.	.02¾@	—
Less c.l. (10-25 bbls.)	lb.	.03 @	—
Lots less than 10 bbls.	lb.	.03¼@	—
Fluxrite	lb.	.05½@	.06½
Palm Lagos	lb.	.04⅝@	—
Niger	lb.	.02¾@	.03
Para-Flux	gal.	.17 @	—
Petrolatum, light	lb.	.02½@	—
Pigmentaroil	gal.	.13 @	.18
Pine, steam distilled	gal.	.59 @	.61
destructively distilled	gal.	.56 @	.58
Tackol	lb.	.08½@	.18
Witco Palm Oil	lb.	.07½@	—
Witco Softener (f.o.b. wks.)	lb.	.02 @	—
Resins and Pitches Pitch, Burgundy	lb.	.05 @	.06
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	6.00 @	—
Rosin, grade K, 290 lb.	bbl.	5.50 @	—
Pigmentar	gal.	.13 @	.18
Tar Retort, 50 gal.	bbl.	9.50 @	10.00
Solvents Acetone, pure	lb.	.10 @	—
Alcohol, denatured, No. 1 bbls.	gal.	.30½@	.41½
Benzol, 90%	gal.	.20 @	.22
Carbon, bisulfide	lb.	.05 @	.06
Carbon, tetrachloride	lb.	.05¼@	.06
Dipentene	gal.	.31 @	.41
Dryolene (f.o.b. Okla.)	gal.	.10 @	.10½
Ethylene dichloride	lb.	.05 @	.06
Gasoline, steel bbls.	gal.	.16 @	—
Naphtha, solvent	gal.	.26 @	.31
Rub-Sol (f.o.b. Okla.)	gal.	.09 @	—
Turpentine, spirits	gal.	.55 @	—
wood	gal.	.50 @	—
destructively distilled	gal.	.45 @	—
Waxes Beeswax, white	lb.	.30 @	.32
Carnauba	lb.	.25 @	.26
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.05 @	.06
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Paraffin (c.l.—f.o.b. N. Y.) Yellow crude scale	lb.	.02¾@	.03½
White crude scale 124/126	lb.	.02 @	.02½
Refined, 125/127, 138/140	lb.	.03 @	.07

ANTI-OXIDANTS

AgeRite, Gel	lb.		
Powder	lb.		
Resin	lb.		
White	lb.		
Albasan	lb.	.70 @	.75
Antox	lb.		
B-L-E	lb.	.57 @	.60
Flectol A and Flectol-B	lb.	.54 @	.62
Neozone	lb.		
Oxynone	lb.	.68 @	.80
Retardex	lb.	.35 @	.40
Stabilite	lb.	.57 @	.62
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.55 @	.60

SPECIALTIES

Aromatics- Rodo	lb.		
Para-Dors No. 5145	lb.	2.00 @	—
Sunproof	lb.	.35 @	.37½
Sponge Paste	lb.	— @	.30
Tonox	lb.	.54 @	.60

SUBSTITUTES

Black	lb.	.06 @	.08
White	lb.	.07½@	.12
Brown	lb.	.06½@	.11

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.04 @	—
Sulfur flour, Ref'n'd, 100% pure (bags)	cwt.	2.40 @	2.75
Commercial (bags	cwt.	1.75 @	2.10
Telloy	lb.		
Vandex	lb.		

Crude Rubber
Latex and Guayule
Reclaimed Rubber
Tires and Tubes

STATISTICS OF THE INDUSTRY

Rim Production
Automobiles
Gasoline
Cotton Prices

U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Total Declared Value	Average Declared Value per pound Cents	Re-exports: Long Tons	Total Declared Value	Average Declared Value per pound Cents	Net Imports: Long Tons
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,733	20.64	523,599
1930	482,082	139,134,330	12.89	30,205	9,316,205	13.77	451,877
1931	497,138	72,918,949	6.54	25,595	4,255,472	7.42	471,543
1932	409,584	31,936,459	3.47	20,929	2,015,612	4.30	388,655
1931:							
July	43,469	6,023,748	6.19	1,435	223,587	6.96	42,034
Aug.	35,669	5,138,404	5.93	2,324	345,953	6.65	36,345
Sept.	38,494	4,970,324	5.76	1,362	187,431	6.14	37,132
Oct.	41,131	4,803,582	5.21	1,527	203,574	5.95	39,604
Nov.	43,345	4,742,218	4.72	1,403	198,284	6.31	43,345
Dec.	53,536	5,610,120	4.68	2,462	326,382	5.91	51,070
1932:							
Jan.	33,221	3,387,505	4.55	1,524	185,466	5.43	31,697
Feb.	27,959	2,690,250	4.29	1,915	222,584	5.19	26,044
Mar.	45,197	4,251,801	4.19	2,227	240,128	4.84	42,970
April	37,903	3,181,343	3.74	2,128	196,934	4.53	35,775
May	34,182	2,798,914	3.71	1,505	144,561	4.30	32,677
June	40,808	2,647,085	2.89	1,951	134,336	3.02	39,136
July	32,306	2,102,915	2.91	2,030	179,699	3.95	30,276
August	33,449	2,027,045	2.71	1,339	128,952	4.29	32,110
Oct.	35,096	2,436,522	3.10	1,059	98,022	4.13	34,037
Nov.	28,908	2 263,469	3.48	1,745	158,618	4.06	27,163
Dec.	31,384	2,360,061	3.34	770	66,165	3.98	30,614
1933							
Jan.	29,822	2,213,828	3.03	1,403	109,916	3.49	28,419
Feb.	22,603	1,554,086	3.12	1,244	102,129	3.73	21,359
Mar.	27,936	1,867,657	2.98	1,127	86,216	3.42	26,809
Apr.	20,240	1,291,186	2.85	798	70,111	3.92	19,442
May	26,002	1,694,963	2.93	1,842	189,451	4.59	24,894
June	22,900	1,780,495	3.47	1,276	156,168	5.46	21,624
July	44,625	4,293,111	4.29	1,419	219,945	6.92	43,206
August	44,257	5,391,709	5.44	2,205	302,132	6.12	42,052

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All quantities in Long Tons)

	Guayule: Tons	Dollars	Balata: Tons	Dollars	Jelutong: Tons	Dollars	Liquid Latex (1): Tons	Dollars
1924	1,856	536,392	464	568,456	6,165	1,237,100	2,157	864,059
1925	3,781	1,803,448	517	574,760	6,749	1,642,531	3,853	3,537,810
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	3,388	4,680,386
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,116	876,077
1928	3,075	1,755,685	731	430,855	7,552	2,540,059	4,167	2,185,579
1929	1,231	545,175	728	566,964	8,203	2,458,136	3,728	1,787,997
1930	1,096	347,388	501	422,684	5,907	1,403,244	4,449	1,506,804
1931	—	—	1,208	411,692	5,777	1,019,010	4,650	884,355
1932	—	—	708	147,403	4,607	616,596	5,085	601,999
1932:								
Sept.	—	—	11	2,261	216	27,265	297	46,380
Oct.	—	—	84	17,451	349	48,816	711	69,053
Nov.	—	—	134	15,983	163	20,296	526	70,785
Dec.	—	—	22	5,209	276	36,298	632	79,250
1933								
Jan.	—	—	33	7,815	357	40,586	841	100,900
Feb.	—	—	12	2,923	391	52,171	367	46,037
Mar.	—	—	45	11,963	437	56,262	539	55,731
Apr.	—	—	7	2,054	210	26,856	794	80,794
May	—	—	35	9,869	463	55,560	734	71,008
June	—	—	759	1,514,296	466	61,229	604	66,827
July	—	—	238	76,141	638	79,049	618	85,636
August	—	—	272	527,147	390	55,509	1,156	196,138

(1) Latex import figures not available before 1924. Weight given in pounds of dry rubber contained in latex.

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1926	1927	1928	1929	1930	1931	1932	1933
Jan.	32,196	31,518	34,403	43,002	36,194	28,557	27,962	21,661
Feb.	31,136	30,137	33,702	41,594	33,302	28,797	30,011	21,638
Mar.	32,936	36,141	35,688	44,730	35,540	32,788	27,828	18,047
Apr.	32,696	35,871	32,772	47,521	39,686	33,321	25,953	26,226
May	29,364	34,592	37,333	49,233	39,386	37,817	30,597	44,580
June	28,598	33,801	37,676	43,227	34,195	37,916	41,475	51,326
July	27,577	29,219	37,407	41,526	29,508	31,397	29,976	50,184
Aug.	34,533	33,460	42,927	38,274	30,850	27,586	22,372	44,939
Sept.	32,904	27,214	39,882	34,707	25,515	23,638	22,491	—
Oct.	29,936	26,790	40,857	34,800	27,516	22,277	21,018	—
Nov.	28,080	26,792	37,461	27,659	23,691	22,943	21,910	—
Dec.	26,293	25,492	31,232	23,531	21,687	21,409	16,990	—
Totals	366,149	371,027	441,340	469,804	375,980	348,986	313,122	—

Figures on Quarterly Basis

Quarter	1926	1927	1928	1929	1930	1931	1932	1933
Jan./Mar.	94,301	99,216	103,558	128,565	101,610	89,652	85,309	64,211
Apr./June	87,109	103,242	103,500	139,292	112,229	107,755	92,643	121,445
July/Sept.	93,793	89,210	117,573	113,746	85,261	83,632	72,523	—
Oct./Dec.	88,212	80,860	117,597	84,872	72,020	65,645	64,145	—
Totals	358,415	372,528	442,227	466,475	371,120	346,684	314,620	—

Note—The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Reclaimed Rubber in the United States

(All Quantities in Long Tons)

Year	Production	Consumption: Tons	% to Crude	Stocks*
1922	57,834	54,458	19.3	.....
1923	74,766	69,534	22.7	.....
1924	80,079	76,072	22.4	.....
1925	132,930	137,105	35.6	13,203
1926	180,582	164,500	45.9	23,213
1932:				
Jan.	8,753	8,440	30.2	18,712
Feb.	8,731	8,332	27.7	18,659
Mar.	8,613	7,420	26.7	19,721
Apr.	5,561	5,555	21.6	21,525
May	5,024	6,070	20.8	18,889
June	5,923	7,031	18.0	16,870
1933:				
Jan.	5,245	4,506	20.8	15,117
Feb.	4,530	4,087	18.9	15,403
Mar.	3,847	3,454	19.1	15,496
Apr.	4,617	4,407	16.8	14,370
May	8,366	7,770	17.4	13,734
June	10,591	9,674	18.8	13,231

Year	Production	Consumption: Tons	% to Crude	Stocks*
1927	189,144	178,471	47.6	24,980
1928	208,516	223,000	50.4	24,785
1929	218,954	226,588	48.4	27,464
1930	157,967	153,497	40.8	22,000
1931	133,351	124,126	33.9	19,257
July	5,417	5,131	18.1	16,333
Aug.	3,264	4,382	18.6	14,629
Sept.	5,308	5,235	23.2	14,059
Oct.	6,605	5,494	26.1	13,911
Nov.	6,542	5,234	23.9	14,047
Dec.	5,626	3,968	23.4	15,202
Jan.	12,049	10,317	20.6	14,108
Feb.	11,708	9,446	21.0	15,037
Mar.	.....	.....	.....	.....
Apr.	.....	.....	.....	.....
May	.....	.....	.....	.....
June	.....	.....	.....	.....
July	.....	.....	.....	.....
Aug.	.....	.....	.....	.....
Sept.	.....	.....	.....	.....
Oct.	.....	.....	.....	.....
Nov.	.....	.....	.....	.....
Dec.	.....	.....	.....	.....

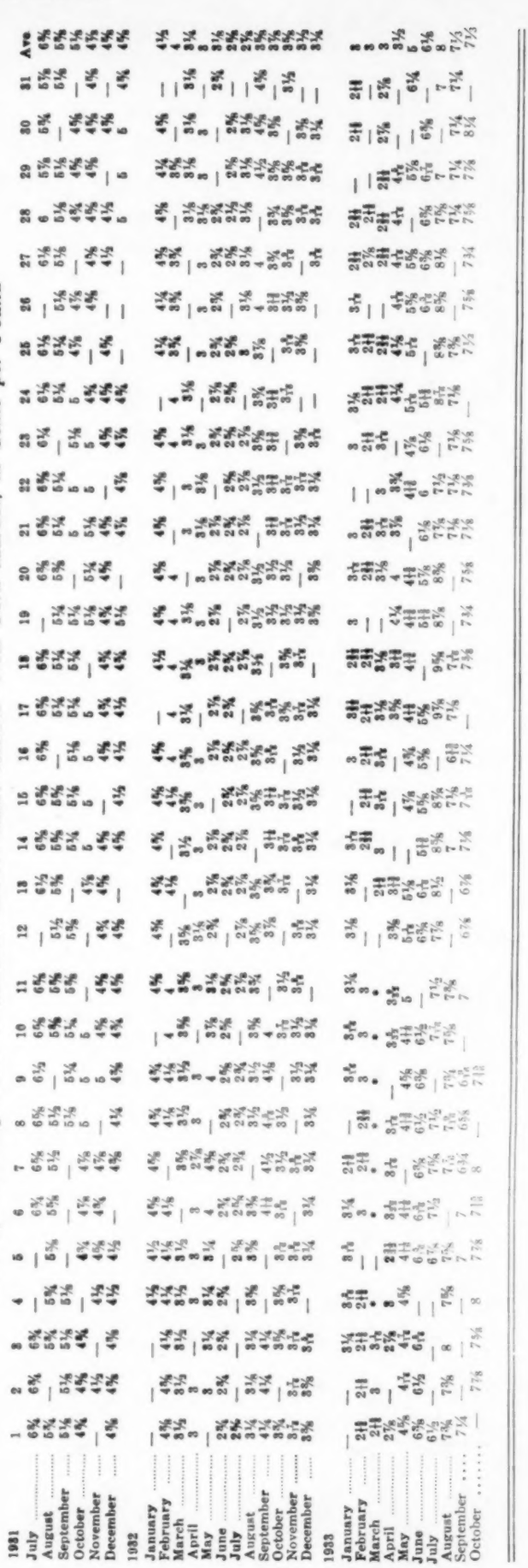
* Stocks on hand at the end of month or year.
(Rubber Manufacturers' Association figures raised to 100%)

U. S. Consumption of Gasoline

(In Thousands of Barrels of 42 Gallons)

	1931	1932	1933		1931	1932	1933
January	26,844	26,038	26,510	August	39,459	35,706	37,426
February	26,133	25,378	23,312	September	36,670	33,828	.....
March	31,037	29,597	28,227	October	35,051	32,680	.....
April	33,400	31,234	30,176	November	30,640	29,895	.....
May	35,716	32,016	33,999	December	30,529	27,110	.....
June	38,375	39,489	37,710				
July	39,459	30,929	34,458	Total	403,418	373,900	.....

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*



Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1929

Year	Cents	Year	Cents	Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15	1922	17.50	1926	48.50
1911	141.30	1915	65.85	1919	48.70	1923	29.45	1927	37.72
1912	121.60	1916	72.50	1920	36.30	1924	26.20	1928	22.48
1913	82.04	1917	72.23	1921	16.36	1925	72.46	1929	20.55

Average Monthly Price per Pound Since 1927

Month	1927 Cents	1928 Cents	1929 Cents	1930 Cents	1931 Cents	1932 Cents	1933 Cents
Jan.	38.75	40.25	20.14	15.24	8.34	4.38	3.08
Feb.	38.25	32.75	23.97	15.85	7.70	4.03	2.95
Mar.	41.04	26.82	24.55	15.34	7.71	3.35	3.01
Apr.	40.86	18.97	21.18	14.93	6.43	3.02	3.56
May	40.76	18.99	21.46	14.24	6.49	3.09	4.95
June	37.25	19.59	20.64	12.45	6.35	2.66	6.15
July	34.87	19.40	21.30	11.24	6.37	2.89	8.01
Aug.	35.12	19.46	20.59	9.96	5.38	3.63	7.31
Sept.	33.67	18.47	20.37	8.28	5.08	3.84	7.30
Oct.	34.32	18.83	19.67	8.20	4.87	3.65	——
Nov.	37.58	18.26	16.62	9.01	4.65	3.44	——
Dec.	40.63	17.97	16.12	9.05	4.64	3.24	——
Average for Year	37.72	22.48	20.55	11.98	6.17	3.49	——

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	July	Aug.	Sept.	Oct.	Day	July	Aug.	Sept.	Oct.
1	3 11/16	3 11/16	3 3/4	—	17	4 1/16	3 3/4	—	—
2	—	3 11/16	—	4 1/16	18	4 1/16	3 3/4	3 11/16	—
3	3 11/16	4 1/16	—	3 11/16	19	4 1/16	—	3 11/16	—
4	3 11/16	3 11/16	3 11/16	4	20	4 3/16	—	3 11/16	—
5	3 11/16		3 11/16	3 11/16	21	4	3 11/16	3 11/16	—
6	3 11/16		3 11/16	4	22	3 11/16	3 11/16	3 11/16	—
7	3 11/16		3 5/8	4	23	—	3 3/4	3 11/16	—
8	3 11/16	4	3 11/16	—	24	4 1/16	3 11/16	—	—
9	—	3 11/16	3 11/16	3 11/16	25	4 1/4	3 11/16	3 11/16	—
10	3 11/16	4	—	—	26	4 1/16	—	3 7/8	—
11	3 11/16	3 11/16	3 11/16	—	27	4 1/8	—	3 11/16	—
12	3 11/16		3 11/16	—	28	3 11/16	3 11/16	3 7/8	—
13	3 7/8		3 11/16	—	29	3 3/4	3 3/4	4 1/16	—
14	3 11/16	3 11/16	3 5/8	—	30	—	3 3/4	4 1/16	—
15	3 7/8	3 11/16	3 11/16	—	31	3 3/4	3 3/4	—	—
16	—	3 11/16	3 5/8	—					

Average Monthly Price Per Pound

Month	1930 Pence	1931 Pence	1932 Pence	1933 Pence	Month	1930 Pence	1931 Pence	1932 Pence	1933 Pence
Jan.	7.471	4.160	3.052	2.264	Aug.	4.880	2.385	2.654	3.811
Feb.	7.948	3.823	2.760	2.093	Sept.	4.075	2.524	2.485	3.728
Mar.	7.595	3.822	2.047	2.099	Oct.	4.023	2.898	2.425	——
Apr.	7.391	3.082	1.876	2.323	Nov.	4.440	2.890	2.518	——
May	6.926	3.035	1.825	2.966	Dec.	4.516	3.115	2.444	——
June	6.195	3.082	1.750	3.392	Average for				
July	5.648	3.048	1.875	3.860	Year	5.926	3.155	2.434	——

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Aug.	Sept.	Oct.	Day of Month	Aug.	Sept.	Oct.	Day of Month	Aug.	Sept.	Oct.
1	10.40	9.45	——	11	9.30	9.05	——	21	9.35	9.65	——
2	10.45	——	9.90	12	9.20	9.05	——	22	9.50	9.80	——
3	10.30	——	9.80	13	——	9.35	——	23	9.30	10.15	——
4	10.15	——	9.90	14	9.00	9.55	——	24	9.30	——	——
5	10.05	9.10	9.70	15	8.85	9.60	——	25	9.55	10.05	——
6	——	9.30	9.50	16	8.65	9.70	——	26	9.60	10.05	——
7	——	9.20	9.50	17	9.30	——	——	27	——	10.00	——
8	9.60	9.00	——	18	9.25	10.15	——	28	9.65	9.90	——
9	9.85	8.85	9.65	19	9.35	10.45	——	29	9.65	9.90	——
10	9.65	——	——	20	——	10.05	——	30	9.55	9.95	——
								31	9.45	——	——

Average Monthly Price Per Pound

Month	1930 Cents	1931 Cents	1932 Cents	1933 Cents	Month	1930 Cents	1931 Cents	1932 Cents	1933 Cents
Jan.	17.21	10.27	6.65	6.28	Aug.	12.03	7.21	7.43	9.55
Feb.	15.62	10.96	6.55	6.05	Sept.	10.85	6 52	6.30	9.64
Mar.	15.13	10.90	6.86	6.39	Oct.	10.63	6.32	6.30	——
Apr.	16.39	10.19	6.16	7.02	Nov.	10.96	6.44	6.22	——
May	16.43	9.38	5.72	8.64	Dec.	10.02	6.24	6.00	——
June	14.48	9.05	5.22	9.47	Average for				
July	13.10	9.28	5.87	10.76	Year	13.57	8.56	6.41	——

*Exchanges closed due to Bank Moratorium.

World Stocks of Crude Rubber

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND 1931	ON HAND 1932	ON HAND 1933	AFLOAT 1931	AFLOAT 1932	AFLOAT 1933	ON HAND AND AFLOAT 1931	ON HAND AND AFLOAT 1932	ON HAND AND AFLOAT 1933
Jan.	209,487	322,860	396,376	56,187	42,234	32,539	265,674	365,094	428,915
Feb.	212,833	322,711	381,794	63,680	51,728	32,898	276,513	373,845	414,692
Mar.	217,804	334,566	390,135	63,133	44,190	29,531	280,937	378,756	419,666
Apr.	228,382	343,099	382,167	56,700	40,387	30,745	285,082	383,486	412,912
May	220,799	346,231	364,623	73,564	50,453	43,342	294,363	396,684	407,965
June	225,536	345,702	333,954	69,421	43,079	63,608	294,957	388,781	397,562
July	234,822	345,927	326,609	66,873	37,894	57,435	301,695	383,821	384,044
Aug.	240,816	357,342	325,148	61,469	41,282	53,084	302,285	398,624	378,232
Sept.	254,324	365,789	.....	62,420	46,188	.....	316,744	411,977	.....
Oct.	273,456	373,823	.....	68,427	40,176	.....	341,883	413,999	.....
Nov.	292,493	377,996	.....	77,443	40,876	.....	369,936	418,875	.....
Dec.	322,826	388,229	.....	53,940	38,360	.....	376,766	426,589	.....

(Rubber Manufacturers' Association figures raised to 100%)

STOCKS IN GREAT BRITAIN

Stocks in London

(No. of Tons in Wharves and Warehouses, including Latex)

At end of	1931	1932	1933	At end of	1931	1932	1933
Jan.	81,093	67,166	36,481	July	81,317	48,842	41,178
Feb.	82,265	65,942	37,182	Aug.	81,560	47,079	39,480
Mar.	84,786	64,280	40,845	Sept.	79,692	44,942	.....
Apr.	86,831	61,848	40,911	Oct.	76,778	42,327	.....
May	86,683	56,089	41,998	Nov.	73,911	40,606	.....
June	83,071	51,009	43,032	Dec.	69,470	37,407	.....

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1933					
March	38,303	38,522	39,400	40,481	
April	40,845	40,495	40,019	40,547	41,234
May	41,478	41,695	41,843	41,969	
June	42,457	42,723	43,361	44,043	
July	43,748	43,319	42,745	42,046	41,161
August	41,211	40,544	40,166	39,237	
September	39,472	39,257	39,191	39,292	39,221
October	38,935				

Stocks in Liverpool

1933				
March	53,850	53,531	53,716	53,692	
April	53,989	54,305	54,762	54,521	54,336
May	55,148	56,139	57,117	56,795	
June	57,560	58,560	59,326	59,272	
July	59,560	59,372	59,135	59,901	58,864
August	58,540	58,391	58,050	57,508	
September	57,266	57,213	56,826	56,625	56,164
October	54,899				

STOCKS IN PENANG AND SINGAPORE

(Stocks held by Dealers—Quantities in Long Tons)

End of	1930	1931	1932	1933	End of	1930	1931	1932	1933
Jan.	39,727	48,802	48,850	22,525	July	45,459	51,203	17,017	36,972
Feb.	44,371	49,283	46,954	21,530	Aug.	48,132	48,971	20,649	38,601
Mar.	45,657	49,590	46,591	24,594	Sept.	44,015	47,025	20,415	.....
Apr.	48,473	45,868	39,663	25,460	Oct.	39,930	52,132	23,158	.....
May	44,715	44,278	38,690	29,822	Nov.	41,674	46,497	25,419	.....
June	42,461	47,517	19,770	34,676	Dec.	45,963	45,795	25,341	.....

STOCKS IN OTHER CENTRES

End of 1932:	Malaya Mainland	Afloat for Europe	Holland	Colombo	Para and Manaos
Oct.	38,125	19,020	2,208	3,219	6,012
Nov.	36,363	21,860	2,229	3,565	5,530
Dec.	40,222	24,430	2,170	3,844	5,552
1933:					
Jan.	38,844	25,080	2,143	4,662	5,676
Feb.	37,323	28,540	2,033	4,210	6,006
Mar.	33,494	26,180	2,183	3,779	5,780
Apr.	33,391	27,710	2,214	3,428	5,204
May	32,613	24,090	1,534	3,177	4,790
June	35,919		1,147	2,913	4,321
July	35,020				3,830

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1928	24,247,282	81.6
1924	21,863,311	19.7	1929	24,141,502	80.3
1925	26,001,564	66.8	1930	17,364,096	80.1
1926	24,199,524	78.8	1931	11,253,800	76.7
1927	19,700,008	79.1	1932	6,004,252	78.7
1933:			1933:		
January	727,308	79.1	July	900,227	—
February	579,789	—	August	950,795	—
March	346,755	—	September	701,302	—
April	898,318	—	October	———	—
May	938,083	—	November	———	—
June	1,015,181	—	December	———	—

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1925	1926	1927	1928	1929	1930	1931	1932
Production	60,845	61,237	64,439	77,944	68,726	50,965	48,739	40,085
Shipments	59,262	59,002	64,059	74,296	69,395	53,638	48,151	40,260
Inventory[2]	8,142	10,456	10,264	13,624	11,838	9,003	7,775	7,644

Figures for Recent Months

	PRODUCTION 1931	1932	1933	SHIPMENTS 1931	1932	1933	INVENTORY 1931	1932	1933
Jan.	3,675	3,462	2,258	3,744	3,253	2,597	8,957	7,912	7,237
Feb.	3,985	3,871	2,339	3,402	2,553	2,292	9,536	9,172	7,377
Mar.	4,663	3,671	2,038	4,122	2,954	2,092	10,014	9,878	7,290
Apr.	4,944	3,517	3,123	4,932	3,698	3,654	10,031	9,846	6,778
May	5,679	3,820	5,189	5,415	4,258	5,180	10,312	9,379	6,760
June	5,672	5,643	6,100	5,572	10,065	6,305	10,447	4,999	6,615
July	4,926	3,617	5,714	5,462	2,404	5,497	9,919	6,203	6,844
Aug.	3,906	3,089	.....	4,960	2,655	.....	8,896	6,659	.....
Sept.	3,172	2,539	.....	3,932	3,082	.....	8,158	6,096	.....
Oct.	2,974	2,569	.....	2,852	1,799	.....	8,300	6,876	.....
Nov.	2,500	2,304	.....	2,887	1,711	.....	7,919	7,454	.....
Dec.	2,643	1,983	.....	2,781	1,819	.....	7,775	7,644	.....

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1925	1926	1927	1928	1929	1930	1931	1932
Production	82,614	76,618	70,823	80,180	68,829	52,420	48,333	36,801
Shipments	81,004	71,591	72,896	77,127	70,592	54,938	50,021	37,935
Inventory[2]	11,313	16,200	13,692	16,117	12,807	9,999	7,922	6,749

Figures for Recent Months

	PRODUCTION 1931	1932	1933	SHIPMENTS 1931	1932	1933	INVENTORY 1931	1932	1933
Jan.	3,623	3,308	2,093	4,062	3,529	2,535	9,439	7,719	6,197
Feb.	3,916	3,281	2,224	3,400	2,728	2,102	9,921	8,760	6,357
Mar.	4,450	3,502	1,883	3,789	2,686	1,902	10,475	9,448	6,369
Apr.	4,617	3,225	2,853	4,636	3,385	3,051	10,413	9,441	6,189
May	5,413	3,409	4,700	5,281	3,867	4,463	10,459	8,913	6,382
June	5,358	5,279	5,448	5,397	9,019	5,778	10,504	5,174	6,097
July	4,955	2,937	5,603	5,831	2,160	5,211	9,589	5,975	6,440
Aug.	4,435	2,748	.....	5,301	2,503	.....	8,774	6,127	.....
Sept.	3,449	2,601	.....	4,150	3,098	.....	8,095	5,753	.....
Oct.	3,077	2,187	.....	2,813	1,658	.....	8,321	6,214	.....
Nov.	2,443	2,005	.....	2,594	1,578	.....	8,119	6,662	.....
Dec.	2,597	1,779	.....	2,767	1,724	.....	7,922	6,749	.....

(1) **Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete beginning with 1929, and that basis has been accepted when preparing the statistics in this table.**

(2) **Held by manufacturers at end of period indicated.**

Automobile Production

	United States Total	Passenger Cars	Trucks	Canada Total	Passenger Cars	Trucks	Grand Total
1926	4,298,799	3,808,753	490,046	205,002	164,483	40,609	4,503,891
1927	3,393,887	2,938,868	453,019	179,426	146,850	32,556	3,573,313
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930	3,355,986	2,814,452	540,534	154,192	125,442	28,750	3,510,178
1931	2,389,730	1,973,090	416,640	82,621	63,477	19,144	2,472,351
1932							
May	184,295	157,756	26,539	8,221	7,269	952	193,370
June	183,106	160,338	22,768	7,112	6,308	804	190,204
July	109,143	94,705	14,438	7,472	6,773	699	118,611
Aug.	90,325	75,907	14,418	4,067	3,166	901	94,391
Sept.	84,150	64,748	19,402	2,342	1,741	601	86,483
Oct.	48,702	35,107	13,595	2,923	2,361	562	51,857
Nov.	59,557	47,532	12,025	2,204	1,669	535	61,760
Dec.	107,353	86,149	21,204	2,139	1,561	578	109,542
Total	1,370,678	1,135,493	235,187	60,816	50,718	10,098	1,431,494
1933							
Jan.	130,044	108,326	21,718	3,358	2,921	437	133,402
Feb.	106,825	91,492	15,333	3,298	3,025	273	110,123
Mar.	117,949	99,885	18,064	6,632	5,927	705	124,581
Apr.	180,667	153,350	27,317	8,255	6,957	1,298	189,922
May	218,303	184,698	33,605	9,396	8,024	1,372	227,669
June	253,322	211,483	41,839	7,323	6,005	1,318	260,645
July	233,088	195,023	38,065	6,540	5,322	1,218	239,628
Aug.	236,480	195,144	41,336	6,079	4,919	1,160	242,559

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[5]						
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley	All Other[6]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,415
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	514,487
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1930	547,043	133,876	413,167	76,970	10,782	10,309	6,781	4,251	69,755	79,396	115,254	7,665	14,260	5,651	814,241
1931	519,740	125,506	394,234	61,769	8,470	10,451	6,247	4,218	75,952	87,747	116,009	11,696	12,121	3,292	792,203
1932	478,252	92,539	385,713	48,973	3,888	6,960	4,664	3,451	61,312	79,837	85,871	13,883	6,450	1,816	702,818
1932:															
Mar.	39,903	6,658	33,245	3,462	284	501	460	217	4,946	6,863	6,299	774	715	77	57,843
Apr.	36,670	4,682	31,988	3,210	365	459	345	130	6,722	6,090	4,935	962	487	99	55,792
May	40,297	5,677	34,620	3,824	304	595	344	118	6,552	6,551	6,012	964	416	278	60,578
June	36,566	5,665	30,901	3,444	359	481	345	166	5,610	7,516	5,507	1,218	394	139	56,080
July	40,723	5,346	35,377	3,501	99	442	400	184	5,779	6,257	6,145	1,233	232	141	59,790
Aug.	39,327	7,371	31,956	4,717	129	506	400	300	4,803	4,882	7,244	1,088	303	49	56,377
Sept.	41,973	8,869	33,104	5,238	122	614	400	340	3,858	6,485	7,664	1,621	318	78	59,733
Oct.	37,981	9,798	28,133	2,945	139	583	350	428	4,022	7,051	8,944	1,147	414	247	54,403
Nov.	40,098	10,072	30,026	4,146	185	683	350	371	4,368	6,250	9,080	809	1,164	156	57,588
Dec.	40,118	10,089	30,029	5,801	367	644	350	406	4,683	7,066	8,594	1,211	824	150*	59,493
1933:															
Jan.	46,599	7,857	38,742	4,602	318	590	458	305	4,766	5,630	6,840	1,957	554	125*	58,887
Feb.	37,564	6,167	31,397	5,064	304	541	458	368	4,895	5,119	6,081	895	620	125*	55,867
Mar.	42,059	7,964	34,095	4,905	389	571	458	304	5,092	6,466	6,999	1,102	995	125*	61,501
Apr.	36,752	7,758	28,994	4,582	272	624	500*	235	5,226	5,969	8,147	1,122	556	125*	56,352
May	42,902	13,664	29,238	4,643	475	1,091	500*	359	6,782	7,298	13,195	1,436	918	125	66,060
June	41,411	16,538	24,873	5,198	377	1,149	500*	632	7,352	6,654	14,779	1,126*	704	125*	63,469
July	50,531	18,772	31,759	4,551		1,358	500*	797	7,367	8,580	16,534	1,301	913	125*	
Aug.	52,266	17,869	34,397	5,692											

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927, 1,437 in 1928, 2,670 in 1929, and 1,274 in 1930. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons 1926, about ½ ton in 1927, and 1 ton in 1928, and practically none in 1929, 1930 and 1931. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, 84 tons in 1927, 1,459 tons in 1928, 1,302 tons in 1929, and 2,656 tons in 1930. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands, and includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown when available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States[1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	238,407	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,808
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	371,409
1921	179,736	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,628
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,439	2,492	2,643	172	—3,807	1,778	589	567	396,222
1923	301,527	12,700	27,392	18,519	13,277	15,372	5,489	2,986	1,649	2,184	792	2,528	630	1,128	409,173
1924	319,103	—11,556	30,446	22,727	14,299	19,571	5,764	2,346	3,124	2,688	—807	3,178	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,483	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	34,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,493	2,670	4,046	1,299	1,870	617,987
1927	403,472	60,249	34,271	38,892	26,405	20,821	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	632,768
1928	407,572	4,846	36,498	37,855	30,447	25,621	12,483	15,134	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	854	4,650	894,633
1930	458,036	120,069	68,503	45,488	28,793	33,039	18,639	16,387	5,354	10,635	2,924	7,710	2,400	4,468	822,445
1931	475,993	86,170	46,466	39,688	25,261	43,483	10,149	30,671	7,649	11,009	2,220	6,360	2,605	7,717	794,641
1932	393,844	44,086	42,506	45,121	20,917	56,027	14,469	30,637	12,576	9,519	2,851	7,262	4,359	9,444	693,618
1932:															
Feb.	26,483	5,930	2,898	4,356	1,723	6,781	1,189	2,931	758	506	500	708	313	306	55,382
Mar.	43,361	3,585	2,482	3,436	2,588	5,398	1,423	2,745	1,211	721	112	456	359	644	68,521
Apr.	36,326	6,826	2,956	3,787	1,600	3,684	1,083	764	1,549	847	348	474	417	1,259	61,870
May	32,818	1,110	2,277	3,447	1,416	3,917	1,033	3,743	2,048	617	286	707	272	350	51,821
June	39,136	1,853	3,666	3,405	2,834	2,834	1,534	5,291	1,421	449	127	578	196	280	63,604
July	30,494	4,082	3,125	3,380	1,529	2,544	1,116	1,735	624	723	—214	784	258	1,207	51,387
Aug.	32,650	6,671	4,919	4,006	970	3,390	1,615	1,740	751	1,211	—66	611	210	557	59,235
Sept.	26,865	3,942	5,845	3,674	2,770	5,878	971	1,376	625	694	103	534	267	406	54,220
Oct.	34,748	2,927	4,715	4,177	1,207	5,653	510	1,853	569	627	553	537	489	986	59,551
Nov.	27,689	4,950	3,830	3,577	1,593	4,563	1,265	1,481	1,653	1,035	275	489	631	650	53,681
Dec.	31,246	1,182	3,205	4,623	941	5,603	2,103	3,720	745	1,298	348	544	485	2,602	57,645
1933:															
Jan.	29,260	3,277	5,858	4,241	1,189	7,611	3,005	1,558	1,275	1,388	308	640	252	838	60,700
Feb.	22,970	7,102	6,603	4,460	1,175	8,508	994	2,820	2,001	1,670	375	564	132	681	60,055
Mar.	27,348	8,883	6,093	4,425	1,114	6,035	1,604	2,088	1,904	952	282	649	340	688	62,405
Apr.	20,236	7,765	6,308	4,805	555	5,495	2,215	2,274	1,580	882	163	606	281	400	53,565
May	24,894	11,085	4,144	4,622	1,704	5,289	1,278	1,691	425	710	—525	536	433	432	56,718
June	22,228	8,739	4,056	3,639	1,441	3,330		2,000	613	469	—519	772	541	400	
July	43,824	3,961	3,774			1,460			2,347			486			

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1]United States imports of guayule are included in this compilation. *Figure is provisional; final figure will be shown immediately it becomes available.

A Section Devoted to Listings of Leading Producers and Distributors of Raw Materials, Machinery and Equipment, and Supplies for the Rubber Industry.

The Market Place

Chemicals and Compounding Materials — Machinery and Equipment—Crude, Reclaimed and Scrap Rubber—Fabrics—Rubber Products — Consulting Engineers.

Chemicals and Compounding Materials —

ACCELERATORS—
Ureka C—Ureka Blend B—Ureka.—A-1, A-7, A-11, A-16, A-19, A-32, Z-88, A-510, DPG
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THE MARKET PLACE Section Continued on Next Page